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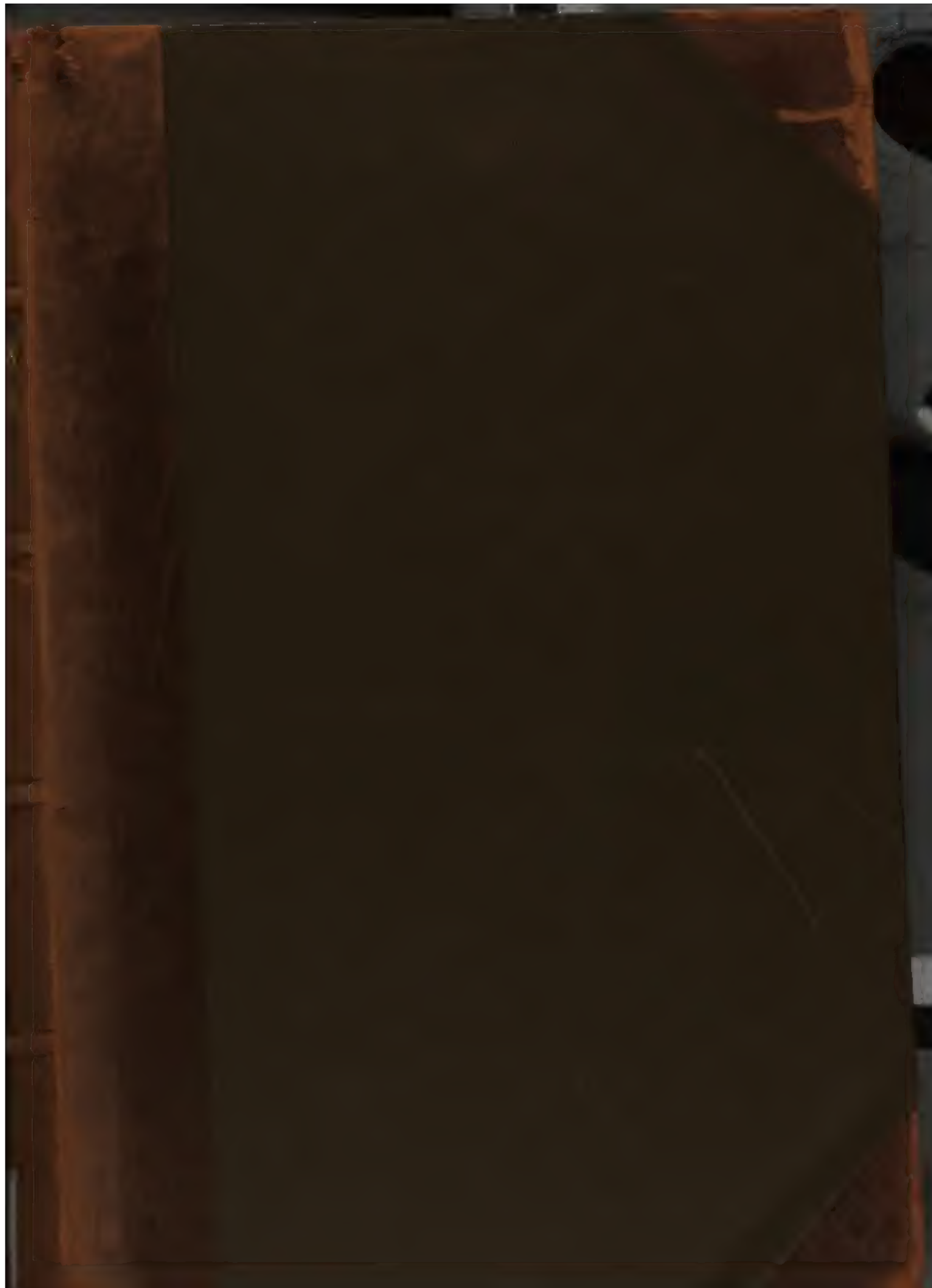
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GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
ESSEX.

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GENERAL VIEW
OF THE
AGRICULTURE

OF THE COUNTY OF

ESSEX,

WITH OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY MESSRS. GRIGGS,

OF HILL HOUSE, NEAR KELVEDON, IN ESSEX.

at Brix
DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE
INTERNAL IMPROVEMENT.

LONDON:-

PRINTED BY C. CLARKE,

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ADVERTISEMENT.

THE following valuable communication, respecting the state of husbandry in the county of Essex, and the means of improvement, drawn up for the consideration of the Board of Agriculture, is now printed, merely for the purpose of its being circulated in that order that every person, interested in the welfare of that county, may have it in his power to examine it fully before it is published. It is therefore requested, that any remark, or additional observation, which may occur to the reader, on the perusal of the following sheets, be *written on the margin*, and transmitted to the Board of Agriculture, at their Office in London, by whom the same shall be properly attended to. And, when the returns are completed, an account will be published of the state of agriculture in Essex, from the information thus collected, which, it is believed, will be found greatly superior to any of the kind, ever yet made public.

The Board has adopted the same plan, in regard to all the counties in the united kingdom; and, it is hardly necessary to say, that they will be happy to give every assistance in its power, to any person who may be desirous of improving his breed of cattle, sheep, &c. or of trying any useful experiment in husbandry.

TO THE READER.

ed, that this paper may be returned to the Board of Agriculture the first of March next.

ly necessary to add, that the Board does not consider itself
 or any fact or observation contained in these reports, which,
 e printed and circulated for the purpose merely of procuring
 formation, and of enabling every one to contribute his mite,
 wement of the country.

January, 1794.

INTRODUCTION.

DIMENSIONS.

THE COUNTY OF ESSEX is one of the maritime counties, extending from West to East about sixty, and from North to South about fifty miles, the boundaries of which are about two hundred and twenty-five miles; comprehending fourteen hundreds, and five smaller districts called half hundreds, four hundred and three parishes, twenty-four market towns, about sixty-two thousand houses, three hundred and twenty thousand inhabitants, and one million two hundred and forty thousand acres; and is bounded on the east by the German ocean, on the west by the rivers Lea and Stort with a part of Hertfordshire, on the north by the river Stour and part of Cambridgeshire, and on the south by the river Thames.

CLIMATE.

This county enjoys great advantages for all the purposes of agriculture. Its climate is mild; the face of it neither too flat, to retain the water longer than is necessary to promote vegetation, nor encumbered with mountains, to prevent the plough from going, almost wherever the farmer chooses to drive it.

SOIL.

Every species of soil, from the most stubborn to the mildest loam, is to be found; nor is the county without a portion

portion of light gravelly land, or a good share of rich meadow and marsh ground, the major part of which, with management adapted to the different natures of it, is very productive. The near situation, the short and ready water carriage to the metropolis, and the inestimable treasures of chalk along the Kentish coast on the west and east parts, with the goodness of the roads, not only towards London, but in every direction throughout the county, insure a quick sale for every commodity, and enable the landholders to improve their farms with manure most congenial to their several soils.

INCLOSURES.

The inclosures, which from time immemorial have almost universally prevailed, make Essex greatly preferable to some of the neighbouring counties; here every man enjoys his own the year round, and accommodates his course of husbandry to the nature, size, and other casual circumstances of his farm; if his land is calculated for grazing, he can lay it down at his pleasure; or if he is unfortunate in a bad season, misses a plant, or has it destroyed by the worm, slug, or any other accident, he is at liberty to plough it up, and sow it again with some different corn, or to alter the rotation of crops as best suits his convenience; his ditches carry off the water from his land; and the thick hedges of white thorn, which grow upon the banks raised by what is thrown out of them, serve to shelter his stock from the storms of winter, as well as to protect his corn from the intrusion of cattle; and by dividing his land into distinct parcels, enable him to support twice the quantity of stock he could otherwise do, advantages an open country can never enjoy.

WATER.

The greater part of Essex is also well watered, by the many brooks and rivers which run through its vales; nor is its air by any means so injurious to the health of its inhabitants, as has been universally reported. The two hundreds of Rochford and Dengey, called in reproach *The Hundreds of Effey*, so dreaded for their agues, are now, whatever they once might have been, not only the most fertile districts, but equally free from noxious vapours with any other parts of the coast.

WASTE LANDS.

Our waste lands, including the forest, may be estimated at full fifteen thousand acres; the greater part of which is as capable of producing corn, after a certain time for necessary improvements, as the adjoining lands, and would in most instances, it is presumed, be made profitable to the community; could some method, such for instance, as passing a general act of parliament, to ascertain the rights of the lords of manors, tithe owners, and the several tenants, which, it is thought, might be done, by proportioning the tenant's claim to the nature and extent, or annual value of his tenements, held of the manor to which the waste belongs, and then enable the lord, who is most frequently more enlightened, and better able to advance the various expences of inclosing, and other necessary improvements, to purchase these rights, as a jury should value them, and thus make it worth his while to erect farm houses and other conveniences, as, without some such power of purchasing, the wastes would be found in most places, too small to admit of as many divisions, as there would be claims given in, or the ground would be allotted to people, unable, from a want of experience, or property, to render their little portions of much service to the public, or to themselves. Or,

if this would be thought in any respect exceptionable, if the 29 of Geo. 2. c. 36. by which the lords of manors are enabled, with the consent of the major part in number and value of those who have right of common, to inclose wastes for the purposes of planting them with timber and underwood, were made general for all other purposes, it might, by degrees, have the same good effect.

SYSTEM OF FARMING.

With respect to the particular questions sent down from the board of agriculture, it may be observed, that no one general system of farming can prevail, over so large an extent, as this country, varying in so many essentials of soil and situation, terms of tenure, abilities and property of occupiers, &c. &c. &c. In the eastern part of it, the land is chiefly of a strong good staple, and, excepting the marshes, and here and there a small portion of meadow, is under the plough, and produces very considerable returns of every sort of grain and pulse. The most approved mode of treating the heavy land here, as in every other part of the county, is; to winter fallow it every third or fourth, and, in some parts, every second or third year, after which, in the eastern parts, oats or barley is sown, and the land laid down with clover, trefoil and rye grass, and having lain one year, is again broke up soon after Michaelmas, and wheat is sown; after which, if the land is clean and in good condition, the farmer takes a crop of beans, and then fallows again. The next rotation frequently is wheat, beans, well hoed, and then wheat again; on the lighter lands, are sown first turnips, for which, a fallow is always made, and the land manured. Barley-sown with clover, &c. which is fed the ensuing year, succeeds the crop of turnips, then wheat, upon the clover lay, and after that peas; but where the clover fails, a circumstance not unusual, the land is considered unfit for wheat, and peas are sown in its stead.

Towards

Towards the middle of Essex, and the northern part bordering upon Suffolk, the soil varies considerably; some being light, with chalky clay or gravelly sand, at a foot, or a foot and a half below the surface; other parts are moist and binding, affording a quick vegetation, and requiring constant attention in the summer months to prevent it exhausting itself by a spontaneous produce; the plough is seen to occupy the larger part of this district, as little more meadow or old pasture grounds are found, than will supply hay and feed for the horses on the farms, and feed for a few cows, kept for the purpose of suckling, and dry cattle and sheep, which are principally bought in one year, and sold out the next. Here, every common sort of grain, pulse, and artificial grass is found, with some well managed and productive hop grounds, which, from the vast expence of cultivating, and uncertain produce, are kept in the hands of the most opulent landholders, to whom they are upon the whole lucrative.

The center of Essex, is too distant from the pits, to procure chalk, but lime, clay, and the other manures, which arise upon the spot, fertilize the soil.

POPULATION AND POOR.

Very extensive woollen manufactories of bays, fays, &c. are carried on at Colchester, and the towns in this part of the county, in times of peace, and occasion a great increase of population, and of course consumption of the products of the land; but when one considers the heavy and almost unsupportable burden, of innumerable poor falling upon the land, the instant a proclamation for war is heard, and see the rates rise to three-fourths of the rent, and sometimes even exceeding it, it seems to strike at the very root of a farmer's industry, and to act almost as a prohibition to all hopes of success, whilst the opulent manufacturer, who alone has grown rich by the labour of the pauper, now seems, from custom, released

from disbursing any part of his gains, to support the instruments of his wealth, when trade declines, and they are compelled to apply to their parish for relief.

CROPS.

In the north west part, the land is found from experience to yield most, if one crop only and a fallow is taken, except indeed, where it will bear turnips or clover, which answer particularly well here. Very little meadow or pasture is seen, but good crops of wheat, oats, peas, and beans are grown by means of these frequent fallows, besides a very considerable quantity of excellent barley, malted upon the spot for the London market, where it is said to be in high esteem. In the south east corner, farming seems to be as near, if not nearer perfection, than in any other part of Essex. The land is in general of a deep, rich, tender, loamy quality, and, as in other parts, rather farmed than grazed. The crops of wheat, beans, oats, coleseed or rape, mustard, and in short of any thing that is sown, afford a great return, compared with the common produce of land. The wheat is not unfrequently found to rise to a load an acre ; oats (particularly the Poland), to eleven or twelve quarters, and beans and other corn in proportion. Some of this land has been known to produce five or six of the most exhausting crops successively, without a fallow or other particular usage, affording large crops of each. Wheat has been sown three successive years upon the same field, and the crops, upon an average, have amounted to four quarters per acre, the first, from the too great richness of the soil, being the least ; though this, it must be confessed, is, by good managers, seldom put to the test, as it is a maxim in Essex, that land, when used well, that is fallowed, kept free from weeds, and properly ploughed, drained and manured, is a most grateful and sure friend, but if abused, or *run out*, as our phrase is, in a few years it brings its improvident occupier to poverty.

poverty. This part of the county in particular is tilled with great spirit and judgment, though at a very great expence; labour of all kinds is extremely high, occasioned in some measure by a scarcity of hands, which indeed is every successive year less to be complained of, as population is rapidly increasing.

DAIRY.

Our largest dairy farms are at, or in the neighbourhood of Epping, so deservedly famous for the richness of its cream and butter. The farmer even here confines himself to no particular sort of cows, but keeps up a stock of promiscuous cattle; bought in as opportunities offer, though indeed the more provident of them say, where the land is particularly good, the Derby and Leicestershires have a preference. These in the summer are fed with the natural and artificial grasses, and in the winter with hay (which is in general of the best quality) and grains. The best dairies are built on the north side of the farm houses, calculated to be always cool; and are furnished with square troughs, lined with lead, sufficient to hold nine or ten gallons of milk, which is seldom suffered to be more than five or six inches deep; this, in winter, is skimmed four, and, in summer, two or three times; and the cream, after being kept three or four days, is churned into butter; and the milk, after it will afford no more cream, is given to the hogs, which it fattens to most delicious pork. Nearer London, their grass land is mown twice, and, upon an average, will produce three loads an acre, at 1800 weight a load; which is mown, made, and stacked in four days, if the weather will permit; for, as soon as it is cut, the field is filled with women and children, who spread it, and turn it three or four times in the course of a day; which expeditious method is almost sure to make the hay good.

POTATOE CULTURE.

Near Ilford, are some very extensive potatoe grounds, which are cropped year after year with this root, and produce a very lucrative trade in Covent Garden: the practice is, in the spring of the year, to select the very small potatoes of last year, or cut the larger ones into pieces, leaving one, two, or three eyes in each, and plant them regularly; these will shoot at each eye; and, unless some accident prevents it, produce a considerable increase by October, when they are taken up, and housed, ready to be carried to market, as the demand is made for them; This species of husbandry, cannot be carried on with success, except in light lands, where the situation is such as to afford a constant supply of town, or other good manure, to keep the land in the best condition.

LANDS NEAR LONDON.

In the more western parts, towards the Thames, lie a considerable range of marshes and rich arable land, cultivated in the usual way practised within the influence of the London market; a detail of which, could be of no use, unless, where a universal market equal to that can be found.

GENERAL STATE OF THE COUNTY.

From the information gathered, chiefly from the accounts which have been given in answer to the queries of the board of agriculture, copied and dispersed amongst the most communicative and intelligent landholders in the different parts of the county, and from our own knowledge and observation, it appears, that the estates of individuals, are by no means so large, as in the northern, and other parts of the kingdom; few

few having more than six thousand a year, in land, within the limits of the county of Essex. The generality of the land is held in tillage, and produces abundance of wheat, barley, oats, beans, peas, turnips, tares, rape, mustard, clover, rye grass, trefoil, and every other valuable sort of grain and pulse; besides the inclosures of hops, carraway, coriander, teasel, and the usual productions of gardens; which, in the neighbourhood of many of our towns, are cultivated to the extent of several acres, in the same occupation; and are more than sufficient to engage the time of the gardener and his family the year round. The farmer, indeed, finds a good account in keeping a certain quantity of stock; and, wherever the soil will admit of it, has a portion of his land in meadow or pasture; but depends greatly upon tares, turnips, and artificial grasses, to help him through the winter and spring months; and endeavours to manage, so that the farming and grazing parts of his business, may mutually assist each other. The size of our inclosures, which, except the marsh lands, seldom exceed fifty or sixty acres, is determined by the extent of the farms; which vary from eight hundred, or nine hundred acres, down to twenty and under; and divided into ten, twelve, or fourteen parcels, according to the nature of them, and the convenience of the occupiers.

WAGES OF LABOURERS.

The labourers are generally employed by the piece, and their work let to them upon such terms, as enables them to earn, from eight and sixpence, to twelve or fourteen shillings a week, each man; and, in the harvest month, calculating all his perquisites of malt, hops, gloves, dinners, &c. from four to six guineas, according to the different parts of the county he is engaged in.

MANURE.

The manures most in request are, chalk, lime, ashlie, dung, the produce of the farm yard, town muck, clay, marl, and maiden earth; of these, where it can be had, and the land has not before been used to it, or where it has been well managed, chalk, on the colder lands, is preferable, and will continue its good effects for twenty years; which indeed it ought to do, as it often happens that it costs the tenant the full value of his land, to improve it by this manure.

MEADOWS.

Our meadows, or low grounds, are seldom watered by art; nor is it thought possible, that any considerable part of the county, should have this advantage, without a greater expence than prudence will justify. No capacious caverns, or receptacles for large quantities of water, formed by barren mountains, are to be seen in this part of England. Nor are our streams so plentifully supplied, that, by damming them up for a few hours, a country could be inundated at pleasure.

FALLOWING.

Fallowing is universally found to answer, and the work is done by horses. The chief reasons for preferring them to oxen, are, that on heavy land, these, in wet weather, will poach, so as to injure it very considerably, by treading down the manure and better soil, beyond the reach of the plough; and leave low places for the water to hang in and impoverish the soil, where horses will do no harm. Oxen move slower, and have less strength, and of course do less work in the same space of time; and particularly where the
land

land is short, and the turnings frequent, much time is lost, by their natural inertness; and to these may be added, the universal dislike the husbandmen have to all innovations upon old practices; which, to those who are conversant with this description of people, will be known to be alone a very great obstacle to the introduction of oxen; though it has lately happened, that beasts, which the Welch drovers bring up ready broken to the yoke, have been made to work, in the hurry of seed time and harvest, and great advantage has been found to arise from it; as, by the addition of one or two yokes of oxen, to the usual stock, no season can prove too short for a farmer; and at more leisure times, the regular team may be sent out, for the various necessities of fuel, manure, &c. without occasioning the plough to stand still: nor is any expence incurred by this assistance, beyond a rack of hay, which is given to the oxen to eat, till they have had time to cool sufficiently to be turned out with safety.

IMPLEMENTS OF HUSBANDRY.

Our implements consist of wheel and foot ploughs, with iron breasts; the latter only used where farming is best managed: waggons large enough to carry two chaldron of coals; tumbrils; and small carts with broad wheels, drawn by two horses, are thought great improvements, where earth, clay, &c. is to be carried from one part of a farm to another; harrows and rolls, of different makes and weights, according to the land they are to be used upon. Seed time and harvest must necessarily be guided, in some measure, by the season; but it is usual with us to sow our wheat in October and November, our oats and barley in March and April, and to cut them in July and August: beans are dibbed in February, and ripen early in September. Our most intelligent farmers are of opinion, no substitute has yet been found out for fallows upon the strong lands: nor do they think any process

is likely to be of that utility to the land, as giving it a year's rest, with good and frequent ploughings, to keep it clean, and expose it thoroughly to the different seasons; this, and laying it down with good spring corn, and feeding it one year, and then breaking it up again, is, by experience, known to produce much more profit to the tenant, and less injury to the landlord, in the course of a lease, than the dishonest method of driving or over-cropping, or even the late boasted drill husbandry can pretend to.

CORIANDER, TEAZEL, AND CARRAWAY.

As Essex is rather singular in the production of a kind of treble crop, consisting of coriander, teazel, and carraway, a particular mention of it may be acceptable to the public. The seeds of these several plants are sown together, very early in the spring, upon a strong old ley, once ploughed; and generally yield very considerable returns: the usual mode is, for a substantial farmer to take in a sort of partner, in this species of husbandry, who is in an inferior situation, and will give up his time to the hoeing and managing of it: the agreement is, that the farmer supplies the land, ploughs it, and pays all parish and other usual charges incident to land; and the labourer sows it, keeps it clean by frequent hoeings, cuts, threshes, and makes it ready for market; and then the produce is equally divided: this connection lasts three years, and sometimes longer. In the first, the several seeds come up; and, when of sufficient growth, are set out with a hoe; and the coriander, which is an annual, is ripe before harvest, and produces a return of from ten to fourteen hundred weight an acre: in the second year the teazel, most of which will run now, yields a load, or six score stafs, of fifty heads each staff; and the carraway from three to six hundred weight of seed: the third year the teazel declines, and the carraway is in perfection, and will yield an equal bulk with the coriander;

ander; and most of the teazel that did not run last season, will produce heads this, and afford a fourth or fifth part of the crop it did the preceding season; by which time the several plants are in general exhausted, though a fourth and even fifth year of carraway, has been known to succeed. The coriander, or *cel*, as some call it, and carraway, are to be treated with great care when ripe, otherwise the largest and best part of the seed will be lost; to prevent which, women and children are employed to cut it, plant by plant, as soon as it is ripe, and put it immediately into cloths, prepared to receive it; and in them it is carried to the middle, or some other convenient part of the field, and threshed upon a sail cloth, spread for the purpose, upon which men stand to receive it; who, with a few strokes of the flail get the seed clean out of the straw, and are ready for another little load in a few minutes. The use of these seeds is too well known to need a word upon that subject. The teazel is also cut by women; who are instructed to leave the weak and rotten heads, and select only the strong and healthy ones; the others, being of no use, would spoil the sample, and the credit of the grower; at the same time these heads are cut with a stalk, of six or eight inches in length, and bound up in small bunches, or gleans, of five and twenty heads each; the like number of which bunches, or gleans, constitute half a staff; which, after a few days sun, to harden and dry them, are tied together upon a stick, or staff, of two feet and a half long; and, in this form, carried to market. The head of the teazel is of a conical form, two or three inches in length, and one, or one and an half, in diameter, at the bottom, or largest end, armed on every part with small, strong points, turned a little downwards; and are bought by the woolen manufacturers; who fix them upon frames, calculated to cover a cylinder, which is made to turn round, and slightly catch their says, bays, &c. which another part of the weaver's machine draws against them; by which means the knap is raised to almost any length the manufacturer wishes. Sometimes, where the

farmer prefers a certainty, he will let his land, for three, four, or five pounds an acre per annum, for three years, ploughing and paying as before, rather than risk the hazards of blights, strong winds, when the seeds are ripe, or a decay of the woolen trade; any of which, greatly lessen the profits of this speculation. After the carraway is worn out, the farmer resumes his land, and has nothing to do, but plough and sow, for a good crop of wheat the following year, which is seldom known to disappoint him, after the land has been thus treated.

LAND DITCHING.

One of our most beneficial and permanent modes of improving land, not universally known, is, by land ditching or under draining. Where this process is intended, it must first be considered, whether the soil is sufficiently porous, to receive benefit adequate to the expence of it, as, in very strong ones, this sort of drain is not found to answer. But where the water can readily sink eighteen or twenty inches in the land, the farmer draws a furrow from the highest to the lowest part of his field, then digs out a spit, twelve or fourteen inches wide, and again with an instrument three inches wide, made for this work, digs four or five inches deeper, and with a bent scoop made for the purpose, takes out all the loose earth, and thus makes a narrow channel along the center of the furrow, leaving a sufficient shoulder on each side, to support a quantity of wood and straw, which is put upon them, to prevent the earth, which is now replaced, from falling into the narrow passage left for the water. These ditches are made at various distances from each other, from one, to two or three rods, and of depths, from one to two feet, and upwards, according to the necessity there is for them, and the nature of the soil, through which the water has to make its way, to get at them, and are made to empty themselves into deep ditches

at

at the bottom of the field; or where the field is large, one or more leading land ditch is made sufficiently large to receive the water from several of the smaller ones, which are then contrived to flow into them; where wood is scarce, small round stones have been successfully substituted for it: to make these ditches of more permanent use, they should be cut straight, and the passage for the water made of an equal depth throughout, or it will stop in the lowest parts, and occasions the sides to fall in and choke the drain. Where the soil is adapted to it, this work will last twenty years; but where there are squalls, with sand or drift gravel, the passages are apt to choke in a short time. The plough, waggons, &c. go over these drains without doing them the least injury; and, in parks, and old pastures, it is not uncommon to turn the sod over the water channel, without either wood, stones, or straw; and the ditches are seen to work, or *draw*, as we call it, as well, after running thirty years, as they did at first. The better appearance and real improvement of the land are too obvious to be a moment doubted, by those who knew the land before and after this method has been used.

WOOD LANDS.

The woodlands of Essex are extensive, and would supply a vast quantity of well grown straight timber, could the proprietors be induced to suffer them to stand till they arrive at their full size; but the very distant prospect of seeing young trees become fit for his Majesty's dock yards, the late high price of bark, valuable in proportion to the sap, or growth in the tree, and the real injury they are to the underwood, which we sell every twelve, fourteen, or sixteen years, together with the increase of rent paid for land, preclude all hopes of keeping up our stock of the most necessary timbers, and even seem to threaten the destruction of most of our woods, which are yearly lessened to convert the land into farms. The management,

ment of underwood, particularly where the stubbs are young, might, it is presumed, be improved by obliging the woodman to cut it even with, if not rather below the surface of the ground, by which means the stubbs would produce more plentiful shoots, and afford a quicker growth, besides that the quantity cut would be considerably increased, as it is no uncommon thing to see the old stubbs left a foot or two high, after the wood is felled; and if more attention were paid to the draining of woodlands, the owners would find a good account in it, when the wood next came in course for felling.

FARM HOUSES AND COVENANTS IN LEASES.

The houses upon the Essex farms are good and conveniently constructed, and the stables, barns, cowhouses, and other buildings, more numerous, than in most other counties. These, after being put into repair by the landlord, at the commencement of the lease, are generally to be kept so at the tenant's expence, at least as far as workmanship goes; this clause, with others to prevent meadows and old pastures from being broken up; to oblige the tenant to fallow every second or third year, to prohibit the growth of hemp, flax, wood, and such exhausting crops from being sown; to forbid the disposal of any of the hay, straw, or manure arising on the farm, are generally inserted in all leases, though particular covenants are entered into in almost every grant, according to the particular circumstances of the case.

Our farmers of the present day, are much more enlightened than their predecessors half a century ago, and the more equal division of landed property than once prevailed, has brought the landlord and his tenant upon a nearer level, by which means a sort of friendly intercourse is kept up, and the tenant's mind expanded by the more liberal ideas of his landlord, would induce him to incur any expence in such improvements

as his reason and experience could justify, were he sure of reaping all the benefit of them.

STOCK.

If Essex fails in any part of husbandry, it is in the kind of stock it sends to market, which seem to be brought in without any sort of preference to this or that particular breed. In the course of a few miles ride, you will see North and South Wales, Irish and most other sorts of cattle, Norfolk, Hertfordshire, Lincoln, Wilts, &c. sheep, and not uncommonly two or three different kinds in the same field, though of late the South Down sheep, or this with a cross of the Norfolk, have been in great request; and it is to be hoped that an infant agricultural society, established within a twelve month under the patronage of our worthy representatives, will tend to correct this great error, and be of very essential service to the interest of the farmer, in all other particulars capable of improvement.

OBSTACLES TO HUSBANDRY.

As the honourable board has condescended to ask our opinion, of the supposed obstacles to improvement in agriculture, it is humbly submitted to their attention, whether this most useful science would not be greatly assisted, if the opulent manufacturers, were made to contribute in a larger proportion, to the necessities of their weavers, when driven to their parish by distress, than is the case at present; for although it may be replied, that there is already a law for this purpose, it is found so difficult to be put in practice, that it is not attempted here at present.

Other obstacles may be the total want of leases, or the short terms and strict and penal covenants, sometimes insisted upon by gentlemen of property, which prohibits that return which is
necessary

necessary, to induce a man to disburse his property in the improvements of the natural soil; and were the Land owners to consider, that, except in a very few instances of converting meadows and old leas into tillage, destroying timber, &c. their and their tenants real interests are the same, for the greater part of a lease, they would see it to be to their own, and the public advantage, to suffer their tenants to manage the land in such way, as would best enable them to pay their rents with punctuality, and almost give them their own covenants, till the term came within five or six years of its expiration; when, perhaps, it might be nothing more than policy, to guard against the possibility of abuse, by laying down some rules to govern their conduct, in those particulars, where their interest militates against that of their landlords; but any certain fixed method, or rotation of management, will ever be disadvantageous to the growth of corn, so long as the seasons are uncertain, and the many casualties a farmer is liable to (which no art or industry can prevent) continue to perplex him. If it should be thought this liberal conduct on the part of the landlord, might lay his good nature open to the designs of an artful tenant, who might think himself at liberty to crop his land, as long as it would pay him for the tillage, and then resign or sell his lease; it may be answered, that, if the certainty of losing his character, would not operate sufficiently upon him, to prevent such impolitic measures in a tenant, they might easily be provided against by a clause in the lease, calculated for that end; or, by an indemnification of some other sort, before the lease was granted.

Another circumstance which would aid the plough, it is conceived, is liberty to the poor to seek a livelihood wherever work offers, or inclination leads them to seek for it, instead of being subject to be taken up, if found out of their own parish, and carried to what is called to their place of settlement, at the caprice of an overseer, to sit at home, or what is worse, while they have any credit left, at the alehouse, for want of employment; labourers will then, it is presumed, naturally be

be led to reside, where they could render most service to the community, and have a prospect of supporting themselves and families, without being reduced to the mortifying application to an unfeeling parish officer. The rates would be less heavy, the land better tilled, at a smaller expence than at present, and both the rich and the poor would feel the benefit.

Another hindrance to the improvements, which men of property and spirit might otherwise make, particularly in regard to waste and uncultivated land, is the present mode of rewarding the labours of the clergy. Could the honorable board suggest some fair equivalent, which would make that most valuable member of society, the farmer, secure in all the just gains of his laborious endeavours, without injuring the legal rights of the church, it would confer the most substantial benefit on the landed interest in general, assist morality and good neighbourhood, and give comfort to the tithe gatherer, as well as to the landlord and the husbandman, all of whom, were the subject properly understood, it would not be difficult to satisfy.

A further improvement, which seems to follow that of a commutation of tithes, and would increase the growth of the necessaries and conveniences of life, would be, empowering the clergy, to grant leases of the church lands, for such terms, as would insure their tenants a reasonable time to reap the fair returns of the best modes of husbandry; for as they are now circumstanced, no permanent improvements are attempted, the land lies half cultivated, and seems, in almost every parish you go through, to plead for better treatment, by the unexampled poverty of its appearance.

An object, not perhaps beneath the notice of this most useful institution, is thought to be a general commission of sewers, for the repairs and preservation of the sea walls along the coast, which protect the lands most capable of improvement, from the destructive inundations of the salt water, which is known to leave such fatal effects behind it, that the land is not worth the tillage for several years after it has been

overflowed; besides, that the expence and trouble which may have been laid out upon it, are for ever lost. At present, it is common for the owners of land, to manage their own walls according to their own discretion, by which means, the neglect of an individual, may cause not only ruin to himself, but to many of his more careful neighbours, and spread a general distress around him.

CONCLUSION.

It cannot, we flatter ourselves, be thought foreign to the present subject to remark, that, as the justice done to the labourers, by those with whom they lay out their little earnings, must, in some degree, affect the price of work here; officers are appointed to secure that desirable end, not known in every county in the kingdom. Two men are nominated for that purpose, at a certain annual salary (25l. each), whom we call public weighers, whose business it is to go to the several parts of the county, and examine the weights of all millers and shopkeepers, and make returns of those in whose possession any light weight is found, to the quarter sessions, by whose authority they act; and whenever complaint of this sort is made, the suspected dealer is summoned to appear at the following sessions, where, if he is unable to acquit himself of the charge alledged against him, he is sure to be exposed, and otherwise punished, in proportion to his demerits.

F I N I S.



L I S T
OF THE
M E M B E R S
OF THE
Gr Brit
BOARD OF AGRICULTURE

The Arch-Bishop of Canterbury,

The Lord Chancellor,

The Arch-Bishop of York,

• Lord President of the Council,

Lord Privy Seal,

First Lord of the Treasury,

First Lord of the Admiralty,

The Bishop of London,

The Bishop of Durham,

Lord Grenville,

Mr. Dundas,

} Secretaries of State

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Master General of the Ordnance,
The Speaker of the House of Commons,
President of the Royal Society,
The Surveyor General of Woods and Forests, and
The Surveyor General of the Crown Lands :

The Duke of Grafton,
The Duke of Buccleugh,
The Duke of Bedford,
The Marquis of Bath,
The Earl of Winchelsea,
The Earl of Hopetoun,
Earl Fitzwilliam,
The Earl of Egremont,
The Earl of Lonsdale,
The Earl of Moira,
The Earl of Carysfort,
Lord Hawke,
The Bishop of Llandaff,
Lord Clive,
Lord Sheffield,
Right Honourable William Windham,
Honourable Charles Marsham,
Sir Charles Morgan, Bart.
William Pulteney, Esq.
Thomas William Coke, Esq.

Thomas

Thomas Powys, Esq.
Henry Duncombe, Esq.
Edward Loveden Loveden, Esq.
John Southey Somerville, Esq.
Robert Barclay, Esq.
Robert Smith, Esq.
George Sumner, Esq.
John Conyers, Esq.
Christopher Willoughby, Esq.
William Geary, Esq.

Sir John Sinclair, Bart. President.
Sir John Call, Bart. Treasurer,
Arthur Young, Esq. Secretary.

THE Board is impowered to nominate an indefinite Number of HONORARY and CORRESPONDING MEMBERS, the former of whom are intitled to be present at the Deliberations of the Board, but have not the privilege of Voting in any Question agitated there.

OF THE

MEMBERS

OF THE

BOARD OF AGRICULTURE.





S U B S T A N C E
OF
SIR JOHN SINCLAIR'S ADDRESS
//
TO THE
BOARD OF AGRICULTURE
ON THE FIRST DAY OF ITS BEING ASSEMBLED.

THAT he could not forbear troubling the Board with a few words, congratulating the Members present, on the complete establishment of so invaluable an Institution as that of a *Board of Agriculture*. That in other Countries attempts of a similar nature, on a humbler scale, had been made; but that the present, he believed, was the first instance, of such an Institution having been snatched from the feeble hands of Individuals, and invested with all the strength and vigour of public establishment.

That from the circumstance of his having moved in Parliament for the establishment of that Board, HIS MAJESTY had been graciously pleased to nominate him President, a situation, to which he could not otherwise have aspired, among so many Members, distinguished by superior talents, and possessed of greater experience and skill in Husbandry; but that he would endeavour to make up for any personal deficiency, by the most unwearied zeal and attention, to promote the objects for which the Board was constituted.

That no man would have ventured to have made such a Motion in Parliament, without having previously sketched out in his own mind, some general ideas, respecting a system that might be pursued, in case the proposed Institution should take place, and that he would shortly state to the Board, what had occurred to him upon the subject.

That having carried on, for some years past, a correspondence with above 150 individuals, on matters of a public nature (for promoting the Improvement of British Wool, and examining with great minuteness, into the Political State of Scotland) he was enabled, by the experience which he had thus acquired, to ascertain, in a great measure, those leading principles, on which so great and extensive a plan might be conducted, and these he would shortly submit to the consideration of the Meeting.

That in the first place, he had much satisfaction in stating, as the foundation on which the Edifice of National Improvement might be built, that there existed in the Kingdom a great number of able and useful individuals, and of useful information, and

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of actual and efficient capital, than, so far as he could judge, any other of the same extent and population in the universe, could boast of; and that it would be necessary, but to call forth that ability, and to collect that information to give the capital of the country a direction or tendency to increase both in Wealth and Cultivation, in preference to more distant objects, in order to attain, what it ought to be, "*The Garden of Europe.*"

In second place, he was certain, that there existed a greater mass of public opinion at large, (more especially among that description of people, with which the Board of Agriculture was principally connected) than was commonly imagined. He was satisfied, that the Board would find no difficulty, in prevailing upon the able and intelligent Husbandmen of this Kingdom, to try any experiment, or any system, that could contribute to the public good, and did not materially hurt their own personal interests; and that a wide difference would be between a recommendation to improvement, coming from a respectable publication than if it came from private individuals.

In third place, this principle ought ever to be kept in view, that in a good cause, no resist industry and perseverance. That at first, some doubts or jealousies might be entertained of a new Institution, and some rumours might be circulated respecting the Board, which time would soon do away. But for his part, he had no doubt, that if Parliament would continue its pecuniary assistance for a few years, (promoting at the same time, by wise regulations, a general system of Improvement) and if the Board (which he was persuaded would be the case) would persist in its exertions, that in a very short period, the produce of many millions now cultivated in a very defective manner, would be greatly augmented; that millions of acres, now lying waste, would be brought under cultivation, and that the value of the kingdom would be improved, to at least double its present value.

As to the Plan to be pursued, he submitted to the consideration of the Board, the first object ought not to be, *to ascertain Facts*, without which no theory of reasoning, however plausible, could be depended on. That for that purpose, it would be necessary to examine into the Agricultural State of all the different counties in the Kingdom, and to inquire into the means, which, in the opinion of the most experienced men, were the most likely to promote, either a general system of Improvement, or the advantage of particular districts. That by employing a number of Commissioners for that purpose, and circulating their Reports previous to their being published, requesting the additional remarks and observations of those to whom such communications were sent, it was probable, that no important fact, or even useful improvement, would escape notice.

The immense mass of information thus accumulated, would answer two purposes. First, it would point out the measures which the Legislature might take, for promoting Agricultural Improvements; secondly, Individuals would thus be instructed, by the practice and experience of others—the Landlord in the proper mode of managing his property, and the Farmer in the best plan of cultivating his fields.

That

That for attaining the first object, that of legislative assistance, it would be proper to digest the substance of the information that was accumulated, into one Report, to be submitted to the consideration of HIS MAJESTY, and of both Houses of Parliament, suggesting, in the Report, what measures had occurred, in the course of their inquiries, that could tend to the Improvement of the Country. He added, that from the spirit with which these Agricultural Surveys had been gone into, there was every reason to hope, that a report might be drawn up, on the general state of the husbandry of the kingdom, in time sufficient to enable Parliament, to take some effectual measures for the benefit of Agriculture, in the course even of the ensuing Session.

That Parliament might be of essential service to Husbandry in two respects, first, by removing *all Discouragements to Rural Industry*; and secondly, by granting *Encouragements*. That the second was a matter of much delicacy, and which required mature consideration. At the same time it was certain, that by granting Encouragements to Agriculture, the Great FREDERICK of Prussia was enabled to double the value of his dominions, and to amass a very considerable treasure, amounting to well known, to many millions sterling. That such Encouragements operated like manure spread upon the ground, which insured a more abundant harvest. That they also had a tendency to impress on the public mind this truth, "That the cultivation of the soil, is an object so peculiarly interesting to the Community, that those who most assiduously attend to it, are, perhaps, to be accounted the most meritorious Citizens of their Country." That in one point of view, at least, the Husbandman was more intitled to public attention, than those who followed other professions, being more fixed to the territory on which he lived, and less apt to change his habit, inclination, or ability, to wander from it.

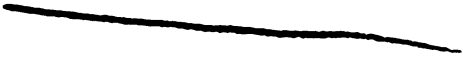
That in regard to instructing individuals, no doubt could be entertained that the great mass of information which would be accumulated, by the Correspondents of the Board, both at home and abroad, that the best mode of managing land and property, or in other words, the most advantageous system of connection between Landlord and the Tenant, would be ascertained, and that the principles of rural Husbandry, for the instruction of the practical Farmer, would soon be brought to a very great degree of simplicity and perfection.

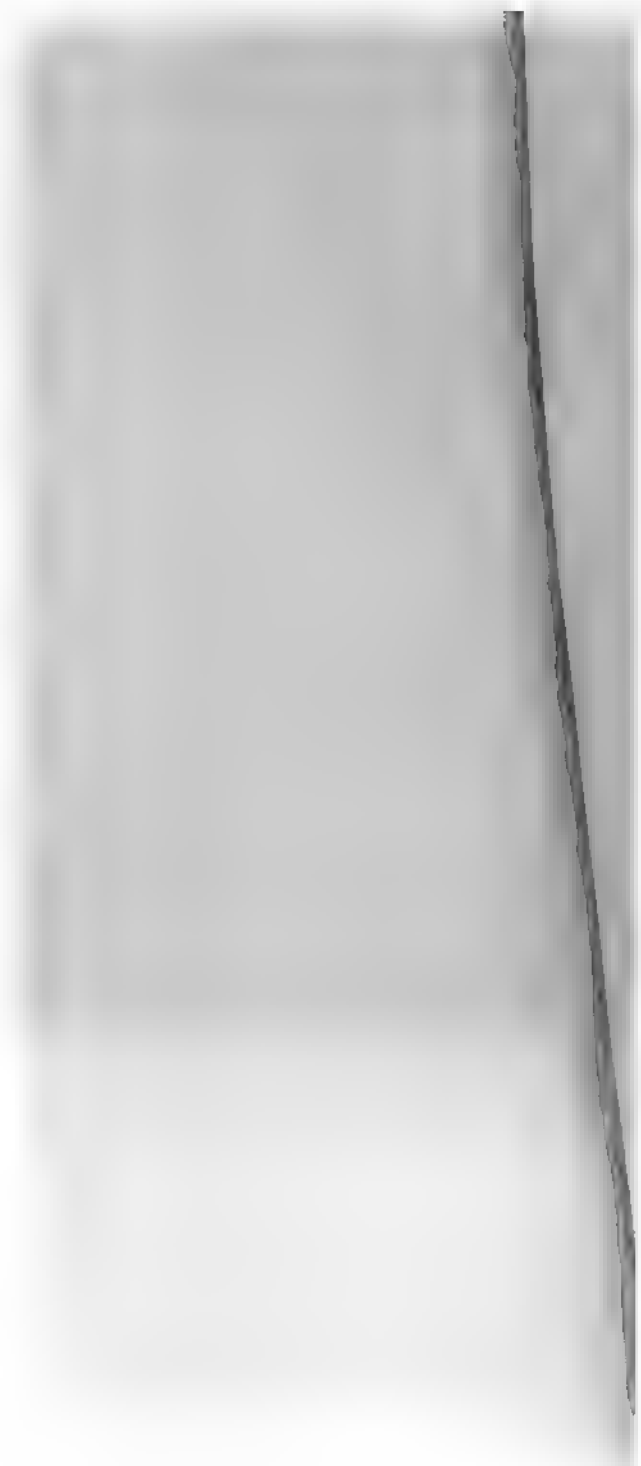
That he would not anticipate, with too much confidence, the important consequences, that might result from such an Institution. He believed, however, that none, from which the Public at large, had reason to expect so many substantial benefits. That the Board, indeed, was already looked up to, even by Foreign Nations, as likely to become *the general magazine of knowledge on agricultural subjects*. That they already considered it as the source from which they were to derive the most important information, and the most solid advantages. That in these respects, and in Agriculture had an advantage over other arts, that no jealousy subsisted among those who were engaged in it, and that every discovery which tended to its Improvement more essentially contributed, than in any other, to promote the general good of the species.

only add, that if the measures he had ventured to hint at, and others
 the Internal Improvement of the Country, which he would afterwards
 unity of suggesting, were approved of by the Board, and carried on with
 zeal, that he was willing to dedicate the whole of his time, and exer-
 t in the prosecution of them, fully convinced that no pursuits could be
 g to the mind for the present, or would be recollected in future, with
 satisfaction.



*Board
 of Agriculture*









ARRANGEMENT OF THE AGRICULTURAL SURVEY

NOW CARRYING ON UNDER THE DIRECTION OF THE BOARD OF AGRICULTURE
AND THE PERSONS BY WHOM THEY ARE RESPECTIVELY UNDERTAKEN

ENGLAND.

COUNTY OF	PERSON.
Norfolk,	Mr Kent.
Suffolk,	Mr Arthur Young.
Essex,	Messrs Griggs of Hillhouse.
Middlesex,	Mr Peter Foot.
Surry,	Messrs Malcolm of Stockwell.
Kent,	Mr Boys of Bethanger.
Sussex,	Rev. Mr Young.
Hants,	Rev. Mr Warren, junr.
Dorset,	Mr Claridge.
Devon,	{ Mr Robert Fraser, surveyor to H. R.
and	
Cornwall,	{ Prince of Wales, and the Agricultural Societies of Devon and Cornwall.
Somerset,	{ Mr Billingsley, and the Bath and England Agriculture Society.
Wilts,	{ Mr Thomas Davies of Longleat, and Society.
Berks,	Mr Pearce.
Bucks,	Messrs Malcolm of Stockwell.
Oxon,	Mr Robert Davis.
Bedford,	Mr Stone.
Leicester,	{ Mr Monk, author of the Agricultural Dictionary now printing, and the Agricultural Society of Leicester.
Warwick,	
Northampton,	{ Mr John Wedge.
Huntingdon,	{ Mr George Maxwell, and Mr Roberts of Boughton house.
Herts,	Mr Stone, and Mr Maxwell.
Rutland,	Mr David Walker.
Chester,	Mr Crutchley of Burley.
Lincoln,	Mr Thomas Wedge.
	Mr Stone.

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COUNTY of	PERSON.
ge,	Mr Charles Vancouver.
aberland,	The Agriculture Society of Durham.
	Mr Bailey and Mr George Culley.
	Mr Bishton of Killsall.
th,	Mr Bishton and Mr Wyatt.
l,	Mr Lane.
er,	Mr Clarke.
	Mr Turner of Dowdeswell.
	Mr Wyatt of Burton upon Trent.
	Mr Lowe of Oxtou.
nd,	{ Mr Bailey of Chillingham, and Mr George
eland,	{ Culley of Fenton in Northumberland,
r,	Mr Pringle of Balencrieff.
.	Mr Pomeroy of Fairway, near Honiton.
1. East Riding.	{ Mr Holt of Walton, and the Agriculture Soci-
2. North do.	{ ety of Manchester.
3. West do.	Mr Leathem.
	Mr Tuke, junr.
	Mr George Rennie, Mr Brown and Mr Shirreff.

WALES

COUNTY of	PERSON.
e,	{ Mr Hafsall.
hen,	
	Mr Lloyd, and the rev. Mr Turner.
	{ Mr Clarke.
in,	
	Mr Lane, and the Agriculture Society there.
	Mr Lovett of Chirke.
n,	{ Mr George Kay.
h,	
very,	

SCOTLAND.

COUNTY of	PERSON.
Berwick,	Mr Fordyce of Ayton.
East Lothian,	Mr Buchan Hepburn.
Mid Lothian,	Mr George Robertson of Granton.
West Lothian,	Mr James Trotter.
Dumries,	Mr Riddell of Glenriddell, &c. &c.
Galloway County and Sewartry,	Mr Webster.
Ayr,	Colonel Fullarton.
Dumbarton,	Reverend Mr Ure.
Renfrew,	Mr Alexander Martin of Salton.
Argyll, and Western coast of Inverness- shire,	Mr Robson.
The Hebrides or Wes- tern Islands,	Rev. Dr Walker, professor of natu- ry in the University of Edinbur;
Stirling,	Mr Belsches.
Clackmannan,	Mr Erskine of Marr.
Roxburgh,	Mr Dawson of Frogden.
Selkirk, and Peebles,	Mr Thomas Johnston.
Clydesdale,	Mr John Naismith.
Carse of Gowrie,	Mr James Donaldson.
Monteith and Strathearn,	Rev. Mr Robertson of Callander.
Kinross,	Dr Coventry professor of Agricult- University of Edinburgh
Fife,	Mr Beatson of Lochgellie.
Forfar,	Mr Dempster of Dunnichen.
Mearns,	Mr Barclay of Urie.
Aberdeen,	Dr Anderson.
Banff, Moray, Nairn, and Eastern part of Inverness,	Mr James Donaldson.
Interior districts in the Highlands,	Mr Marshall author of the Norfolk dry, &c.
The North of Scotland, and the Northern	Sir John Sinclair.

the reports transmitted to the Board, are to be printed, and very generally circulated, in the counties to which they respectively relate, previously to their being published, there is every reason to believe, that no material error can escape observation, and that every useful fact, or valuable idea, existing in the kingdom, on the subject of agriculture, will be brought forward.

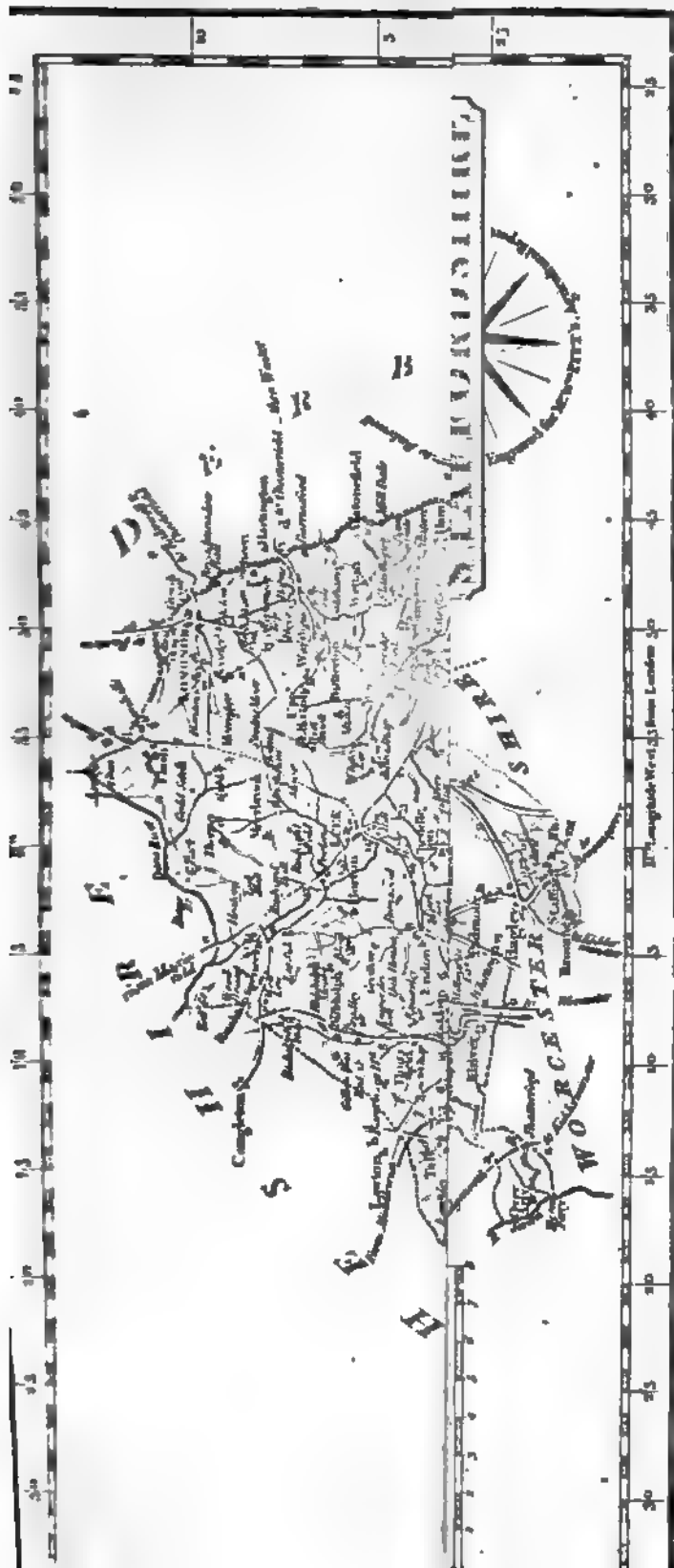
A copy of the returns transmitted by the different surveyors, (or of one that respects any particular county,) will be sent to the members of both houses, on application to the Board, by a letter directed to Sir John Sinclair, the President, at Whitehall, London. It is requested that such application may be made as quickly as possible, (*as the number of copies, to be printed, must be settled accordingly,*) and that a direction be sent at the same time, how the papers are to be addressed.







GENERAL VIEW
OF THE
AGRICULTURE
OF THE
COUNTY OF STAFFO



INTRODUCTION.

TO render the Account of this County perspicuous, it is proposed a slight sketch of its Geography, of its Manufactures and Commerce well as of its Agriculture : but the main object being a delineation of Agriculture, that subject will be treated more fully ; and the others touched upon, so far only as they have a reference to, and tend in measure to illustrate, the main subject.

Considering it as an embellishment, and a relaxation of the mind from the fatigue of constant attention to one subject, the Writer has introduced a few remarks upon Natural History and Botany, and even on some subjects not immediately or closely connected with Agriculture. This done with brevity will not take up much room, and being generally connected with the main subject, may (if the BOARD shall disapprove the introduction of such extraneous matter) be easily expunged by a stroke of the pen. He has farther to express his acknowledgments and obligations to the following Gentlemen, Clergymen and others, for their assistance and recommendation, and the information which he has received from them, and by their means, in this business :

Mr. BRADBURN, *Pipehill, near Lichfield.*

Rev. Dr. FALCONER, *Lichfield.*

Rev. T. GISBORNE, *Yoxall Lodge, Needwood Forest.*

Rev. Mr. DICKENSON, Rector of *Blymhill.*

Rev. Mr. WRIGHT, *Bradley, near Stafford.*

JOSIAH WEDGWOOD, Esq. *Etruria.*

EDWARD SNEYD, Esq. *Bellmont, near Leek.*

- Mr. PRINCEP, *Croxall*.
 Mr. SAMUEL WYATT, *Burton on Trent*.
 Mr. LOCKLEY, *Boscobel*.
 Mr. CORSEP, *Busbury*, near *Wolverhampton*.
 Mr. MILLER, *Dunstall*, near *Wolverhampton*.
 Mr. JOSEPH HORDERN, *Saredon*, near *Wolverhampton*.
 Mr. ELLISON, *Hattons*, near *Wolverhampton*.
 Mr. HIGGS, *Cronkball*, near *Wolverhampton*.
 Mr. FERRIDAY, *Ettingsall Park*, near *Wolverhampton*.
 Mr. FOWLER, *Erdington*, near *Birmingham*.
 Mr. CURTIS, *Walsall*.
 Mr. HARDING, *Ashley Heath*, near *Eccleshall*.
 Mr. HARVEY, *Dunstall*, near *Abbots Bromley*.
 Mr. BOWMAN, at Lord DONEGALL's, *Fisberwick*.
 Mr. JOHN SMITH, *Haunton*, near *Tamworth*.
 Mr. WILLIAM WEBB, *Newbould*, near *Burton on Trent*.
 Mr. JENKINSON, *Stoke*, near *Stone*.
 Mr. GIBBS, *Leek*.

GENERAL VIEW, &c.

GEOGRAPHICAL ACCOUNT.

STAFFORDSHIRE is an inland county situate near the centre of the kingdom. It is bounded on the north by Cheshire and Derbyshire ; on the east by Leicestershire ; on the south by Warwickshire and Worcestershire ; and on the west by Shropshire. It lies, according to Yates, between $52^{\circ} 23'$ and $53^{\circ} 13'$ north latitude, and between $1^{\circ} 29'$ and $2^{\circ} 27'$ west longitude from London ; this place (Pendeford) being in this survey placed in latitude $52^{\circ} 37\frac{1}{2}'$ north, and longitude $2^{\circ} 4'$ west. I found myself, by a pretty accurate observation, made December 20, 1790, being the shortest day, and very fine, about noon, the latitude of Pendeford to be $52^{\circ} 35\frac{1}{2}'$, which varies from the above account only two minutes. The following are the particulars of this observation :

Sun's meridian altitude to upper limb,	14 15
Deduct sun's semidiameter,	0 16
Deduct for refraction,	0 3 $\frac{1}{2}$
	<u>Deduct 0 19$\frac{1}{2}$</u>
Remains meridian altitude of sun's centre,	13 55 $\frac{1}{2}$
Add sun's declination,	23 29
	<u>Sum, complement of latitude, 37 24$\frac{1}{2}$</u>
Consequently latitude of Pendeford,	<u>52 35$\frac{1}{2}$</u>
Sun's central altitude same day at 11 and 1 o'clock,	12 40,
B	The

The greatest length of Staffordshire, from the north part of Ax-Edge Common to the south part of Woods Eaves (south of the Severn), from N. N. E. to S. S. W. is sixty English miles; and the greatest breadth, from the junction of the Trent and Dove, near Newton Solney, to the west point of Terley Heath, near Drayton, nearly from east to west, is thirty-eight miles: the county contains in gross 1220 square miles, and 780,800 statute acres.

This county was a part of the ancient Cornavii. Under the Saxon Heptarchy, it belonged to the kingdom of Mercia. In the modern political arrangement of the kingdom, it is in the Oxford Circuit; and respecting its ecclesiastical government, within the diocese of Lichfield and Coventry. It is divided into five hundreds: 1. Totmanlow to the north; 2. Pyrehill to the north-west; 3. Cuddestone to the south-west; 4. Olley to the east; and 5. Seisdon to the south. It contains twenty-two market-towns, one or two other places where fairs are held, one hundred and eighty-one parishes, but of these more particulars hereafter, and probably about two hundred and fifty thousand inhabitants.

The air of this county I think sharp, and the cold perceptibly to the senses greater than in many other counties, particularly than in the neighbourhood of London, having often had an opportunity of making a quick comparison. The climate too may be termed inclining to wet. The annual rains are, believe, supposing them to stagnate on the ground without waste or evaporation, upwards of thirty-six inches; those of London do not exceed twenty or twenty-one inches; and at Upminster, in Essex, they are only nineteen inches and a quarter. The rains of Lancashire amount to forty-two inches, and those of Ireland to more. I believe it will generally hold good as a rule, that the annual rains on the west side of the kingdom are at least double to those on the east side, which

which I attribute to its being more exposed to the condensation of aqueous vapours arising from the vast expanse of the Atlantic Ocean. I have no doubt also but that a vast deal more moisture in this county falls on high grounds than on low, the high grounds being, from situation, more adapted to break, dissolve, and attract, the aqueous vapours afloat in the atmosphere. Accordingly we often find, after rain, great torrents of water pushing down from the high grounds into the valleys: it is more particularly certain, that the high grounds receive a greater quantity of snow in winter than the plains of less elevation.

The aspect of this country is various. The north part rises gently in small hills, which, beginning here, run through the heart of England, like the Apennines in Italy, in a continued ridge, rising gradually higher and higher into Scotland, under different names: here called Moorlands; then Peake; then Blackstone edge; then Craven; then Stanmore; and then parting into two horns are called Cheviots. The Moorland is a rough dreary cold tract, the snow lying long on it. The people here observe, that the west wind always brings rain, but the east and south winds make fair weather, unless the wind turns about from the west to the south, which then continues rainy. The middle and south part of the county are generally level, or with only gentle eminences. To this however there are some exceptions; as the lime-stone hills of Dudley and Sedgely, which furnish an inexhaustible supply of that material, and great part of it of excellent quality. The Quartzose, or Ragstone Hills of Rowley, furnish an excellent material for roads and pavements. The hills of Clent and Barr-beacon, besides many others of less elevation, as the high grounds on Cannock Heath, the hills of Bushbury and Essington, formed chiefly of, or at least containing great quantities of gravel, Kinfare Edge, Tettenhall Wood, and some situations

near Enville, also command extensive prospects. In this place it may not be improper (as it will not take up much room) to state a few particulars of a subject doubtless curious, and which, though not immediately connected, is yet not altogether foreign to the business in hand. These particulars are, the perpendicular elevation of some of the high summits, medium plains, and lowlands, of this inland county above the level of the tide of the ocean; the writer of this having had many opportunities of ascertaining these particulars, in many cases very accurately, and in others nearly. The lowest points of land in the county are, probably, the Severn at Over Areley, and the Trent where it receives the Dove below Burton.

Elevation of sundry Points of Land in this County, perpendicularly above the Level of the Tide of the Thames at Brentford.

PARTICULAR SPOTS.	ELEVATION.	
	Fect	In.
Banks of the Severn at Over Areley,	60	0
—— of the Tame at Tamworth,	150	0
—— of the Trent at its junction with the Dove,	100	0
—— of the summit of the Staffordshire Canal,	385	0
—— of the summit of the Birmingham Canal,	500	0
—— of the summit of the Wyrley Canal, at Effington Wood New Colliery,	566	0
Summit of Bushbury Hill,	650	0
—— of Barr-beacon,	750	0
—— of the highest peak of Rowley Hills,	900	0
—— of the Grand Trunk Canal,	420	0
—— of a hill called Bunster, near Ilam, in the Moorlands,	1200	0
—— of Wever Hills, and some other of the highest peaks in the Moorlands,	1500	0

Many of the above are by actual observation, and others by estimate only.

Hence it appears, that even in the centre of the kingdom few spots of plain or cultivated country are so much elevated as to be two hundred yards perpendicular above the level of the sea ; and that it by no means follows of course, that the highest spots of ground are far within land, unless such inland situations contain high hills or mountains, the summits of mountains near the coast far overtopping the champaign country, though remote from the sea. I have observed, that the Wrekin and Clec hills of Shropshire, whose bases are upon the lowlands near the Severn, have, nevertheless, their summits rising considerably above the hills in the south of Staffordshire, from whence they are seen ; and the summit of Snowden, though near the coast, I believe to be several hundred yards perpendicularly higher still.

RIVERS OF STAFFORDSHIRE.

THE Severn, though it passes through one of the parishes of this county, (viz.) Over Areley, can hardly be called a Staffordshire river, yet it receives the tribute of some considerable brooks arising in the county ; the principal river therefore of the county is, the Trent, which, rising in the Moorlands near Biddulph, takes a winding course, first southerly, then easterly, and lastly north-easterly, and after washing the county for a course of upwards of fifty miles, leaves it at Burton, where it becomes navigable. In its course it receives

the following rivers, mostly arising also in the Moorlands and the before-named hills, viz. the Dove, the Manyfold, the Hamps or Hanse ; the two last of which run under ground a considerable way near Ilam and Leyhouse ; also the Churnet, the Blythe, the Teyn, and the Sow, after it has received the Penk ; also, below Wichnor, the Tame, which arises in the south of the county, and comes through Tamworth to this place, where it is a considerable river. These rivers all fall into the Trent, which conveys them to the sea. The Stour and Smeftall run through the south of the county into the Severn.

It might be a curious, and perhaps useful subject, not unworthy the patronage of the Board, to ascertain by experiment the quantity of water falling in particular Districts ; and the proportion of such quantity absorbed by the earth and its products, by the atmosphere, and carried off by rivulets respectively. The quantity falling being determined by a weather-gage, the quantity running off seems not difficult to determine ; for in most countries particular outlets may be fixed upon where the superfluous water of a certain district passes off. The extent of such District being ascertained, and a trusty person fixed upon near such outlet, to take, at stated times the depth and velocity of the stream, from thence the quantity of passing water may be estimated. I think a steady excise officer might be instructed to register such account ; and that a small addition of salary might recompense him for his trouble. I know a particular spot in Staffordshire where the flood-water of upwards of one hundred square miles passes at a particular bridge, and can go no other way ; and doubtless similar situations may be found in various places. The county, upon the whole, is well watered, and much of its water appropriated and usefully employed ; yet large quantities of it are carried off in waste by floods.

THE following is a List of the Market-Towns and
Parishes of this County :

MARKET-TOWNS, ANCIENT AND MODERN.

1. Stafford, the County-Town, Market-Day Saturday.
2. Lichfield, Friday.
3. Wolverhampton, Wednesday.
4. Walsall, Tuesday.
5. Burton on Trent.
6. Uttoxeter.
7. Newcastle.
8. Leek.
9. Stone.
10. Chendale.
11. Eccleshall.
12. Rudgeley.
13. Tamworth.
14. Tutbury.
15. Abbots Bromley.
16. Breewood——very trifling.
17. Penkridge——now declined.
18. Cannock——declined.
19. Betley——declined.
20. Wednesbury——for fowls, butter, &c.
21. Burslem, } In the Potteries, now considerable
22. Hanley Green, } markets for provisions.

A LIST OF THE PARISHES OF STAFFORDSHIRE

[By the term Parish is here meant, a tract of land having a place of worship, and united in some degree by common or mutual interest, without regarding the ecclesiastical constitution or dependance upon a superior or mother church.]

In this sense, Totmanflow Hundred contains forty parishes :

- | | |
|---------------------------|----------------|
| 1. Alstonefield | 21. Gratwich |
| 2. Alveton | 22. Grindon |
| 3. Bagnal | 23. Horton |
| 4. Blore | 24. Ilam |
| 5. Bradley in the Moors | 25. Ipstones |
| 6. Bramshall | 26. Kingstons |
| 7. Butterson | 27. Kingsley |
| 8. Calton | 28. Leek |
| 9. Caldon | 29. Longnor |
| 10. Caverswall | 30. Leigh |
| 11. Cheadle | 31. Mayfield |
| 12. Croxden | 32. Oakover |
| 13. Checkley | 33. Onecote |
| 14. Chedleton | 34. Meerbrook |
| 15. Dilhorne | 35. Rocester |
| 16. Draycott in the Moors | 36. Sheer |
| 17. Endon | 37. Warflow |
| 18. Elkstone | 38. Wetton |
| 19. Ellaston | 39. Waterfall |
| 20. Flash | 40. Uttoxeter. |

Pyrrhill Hundred contains forty-seven parishes :

- | | |
|-------------------|---------------|
| 1. Abbots Bromley | 3. Ashley |
| 2. Adbaston | 4. Audley |
| | 5. Blichfield |

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|-----------------|-------------------------|
| 5. Blithfield | 27. Madeley |
| 6. Barlaston | 28. Milwich |
| 7. Blurton | 29. Marston |
| 8. Betley | 30. Newcastle |
| 9. Burslem | 31. Norton in the Moors |
| 10. Bucknall | 32. Stoke on Trent |
| 11. Biddulph | 33. Stafford |
| 12. Colwich | 34. Stowe |
| 13. Colton | 35. Sandon |
| 14. Chabsey | 36. Stone |
| 15. Ellenhall | 37. Seighford |
| 16. Eccleshall | 38. Standon |
| 17. Broughton | 39. Swinnerton |
| 18. Fradswell | 40. Ronton |
| 19. Fulford | 41. Tixall |
| 20. Gayton | 42. Thursfield |
| 21. High Offley | 43. Talk on the Hill |
| 22. Hanley | 44. Trentham |
| 23. Keel | 45. Whitmore |
| 24. Lane End | 46. Woolstanton |
| 25. Muckleston | 47. Weston on Trent |
| 26. Maer | |

Cuddleston Hundred contains twenty-three parishes,
viz.

- | | |
|---------------------------|------------------|
| 1. Aſton | 9. Caſtle Church |
| 2. Baſwich | 10. Dunſton |
| 3. Breewood | 11. Forton |
| 4. Bednall | 12. Gnoſhall |
| 5. Blimhill | 13. Haughton |
| 6. Bradley juxta Stafford | 14. Lapley |
| 7. Cannock | 15. Norbury |
| 8. Coppenhall | 16. Penkridge |
- C
17. Rudgeley

- | | |
|-------------------|-------------------------|
| 17. Rudgeley | 21. Weston under Lizard |
| 18. Sherif Hales. | 22. Wheaten Aston |
| 19. Stretton | 23. Church Eaton. |
| 20. Shareshall | |

Offley Hundred contains fifty-one parishes.

- | | |
|------------------------------|--------------------------|
| 1. Alrewas | 27. Newborough |
| 2. Armitage | 28. Norton under Cannock |
| 3. Aldridge | 29. Pipe Ridware |
| 4. Burton on Trent | 30. Pelfall |
| 5. Barton under Needwood | 31. Rolleston |
| 6. Bloxwich | 32. Rowley Regis |
| 7. Barr | 33. Rushall |
| 8. Clifton Campville | 34. Smethwick |
| 9. Drayton Bassett | 35. Shenstone |
| 10. Darlaston | 36. Statfold |
| 11. Elford | 37. Tutbury |
| 12. Farewell | 38. Tatenhill |
| 13. Hanbury | 39. Thorpe Constantine |
| 14. Hamstall Ridware | 40. Tamworth |
| 15. Harbourne | 41. Tipton |
| 16. Hammerwich | 42. Wichnor |
| 17. Haselour | 43. Whittington |
| 18. Harleston | 44. Wigington |
| 19. Hints | 45. Weeford |
| 20. Handsworth | 46. Walsall |
| 21. Longdon | 47. Wednesfield |
| 22. King's Bromley | 48. Willenhall |
| 23. Litchfield St. Chad's | 49. Wednesbury |
| 24. Litchfield St. Michael's | 50. West Bromwich |
| 25. Marchington | 51. Yoxall. |
| 26. Maviston Ridware | |

Seifdon Hundred contains twenty parishes.

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|-------------------------------|-------------------|
| 1. Amblecott and Brierly Hill | 11. Kinfare |
| 2. Areley Over | 12. Kingwinford |
| 3. Bilston | 13. Pattingham |
| 4. Broome | 14. Patterhall |
| 5. Bobbington | 15. Penn |
| 6. Bushbury | 16. Sedgeley |
| 7. Codshall | 17. Tettenhall |
| 8. Clent | 18. Tryfull |
| 9. Enville | 19. Wolverhampton |
| 10. Himley | 20. Wombourne. |

		Parishes.
Total	Totmanslow Hundred	40 .
	Pyrehill Hundred,	47
	Cuddlestone Hundred,	23
	Offley Hundred,	51
	Seifdon Hundred,	20

Total Parishes in the County, 181

The population of this county is very considerable, and has been of late years much increasing, a large proportion of its inhabitants being otherwise employed than in agriculture, viz. in mines and manufactures. Some of the country parishes are almost incredibly populous. Sedgeley, for instance, contains upwards of sixteen hundred houses (I have been told two thousand), and probably ten thousand inhabitants. Rowley, West Bromwich, and Bilston, have, probably, five thousand inhabitants each. Wednesbury, Darlaston, Willenhall, Handsworth, and Tipton, are very populous. The town of Wolverhampton previous to the present war, by the enquiries of an intelligent person employed in a poor's rate assessment, contained eighteen thousand five hundred

people ; whereas, by a survey in 1750, its inhabitants were only seven thousand four hundred and fifty-four. Walsall now, or, at least, previous to the war, contained, in what is called borough and foreign, which includes part of the neighbourhood, about thirteen thousand inhabitants. This is proved by a penny dole which has long been given annually to all ranks of people there. The number measured by the same standard, in the thirtieth year of Henry the Eighth, was one thousand eight hundred and nine ; and in 1686, according to Plott, not exceeding five thousand five hundred ; and in such proportion has the population there been progressively increasing. The Potteries in the neighbourhood of Newcastle-under-Lyme employ and support a population of about twenty thousand people, exclusive of those in other employments: the population there has been most rapidly increasing for many years preceding the present war. The parish in which I live (Tettenhall), on a calculation from the number of births and burials annually, has increased in population during the present century as two to five. It is composed of people employed both in trade and agriculture ; and its present number of inhabitants are about two thousand. Upon a retrospect of the whole, and considering all the data I can collect, I am of opinion, that the population of this county previous to the present war was about two hundred and fifty thousand, and that its population has at least been doubled during the present century.

AGRICULTURE OF STAFFORDSHIRE.

SOIL.

THE soil of this county (and probably that of every other district in the kingdom of equal extent) is various. The arable

ble soils may, in general, be divided into, first, the stiff and strong, clayey (argillaceous); secondly, the loose and light, sandy (arenaceous); thirdly, although the county has no chalk, yet in the limestone districts, lime earth (or calcareous); fourthly, the mixed, or compound soil or loam, composed of the above with the addition of stones and other matter (*terre compositio*). Also, some uncultivated and other spots contain a thin light black earth, of the nature of peat, generally lying upon gravel: this, when pulverised and dry, is very light, but when thoroughly wet is so retentive of moisture as to resemble mud. The meadow soils are in some places similar to the arable, with the addition of the sediment of water when within reach of streams; in other places composed of peat earth of different thicknesses to several feet, sometimes containing trunks of trees. This peat earth seems to consist principally of the decayed roots of aquatic vegetables, but when drained, consolidated, and meliorated, by top dressing or irrigation, becomes valuable meadow and pasture land: the surface of this kind of land will, upon draining, sink several inches.

The first general division of clay soils consists of two varieties: first, the strong, stubborn, harsh, tenacious clays, or clay loam; secondly, the more mild, tractable, or friable marl or loam. The sandy soils are more or less light, and in some degree intermixed with loam, gravel, or other matter; the mixed soils are also various, and may be termed loam, gravelly loam, sandy loam, &c. according to circumstances.

The excellency of all good soils, probably, depends on the component parts being intermixed in a happy proportion; in their being of a sufficient thickness upon the sub-soil or under-stratum; in the composition of such under-stratum being neither too solid or compact to retain and stagnate all the falling moisture, nor too porous to let it pass off too quick; and

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In the surface lying with a proper aspect to receive the solar rays, and to let off the superabundant moisture. A large proportion of clay gives too much tenacity, and retains too much water. Where sand predominates, the soil being too porous, suffers the water to pass through, or evaporate, and retains too little. Marl and calcareous earth are excellent correctors of both these defects. Stagnant water, by its chillness and want of motion, is death to vegetation : hence the necessity of draining wet soils. A due admixture of vegetable matter enriches the compost, and the action and heat of the solar rays upon the whole mass, bring on a gentle fermentation, and give life and vigour to the latent and prolific principles of vegetation contained therein. Where Nature has left her work unfinished, it is the business of art, and of the farmer's profession, to assist and forward her operations, and to assimilate, as much as possible, such unfinished spots to those which she has left nearest perfection : he who does this in the most rational and complete way, is the best farmer.

DIVISION OF SOILS.

	Acres.
THE gross acres of the county, as stated before, are about	780,800
Deduct for roads, lakes, pools, ponds, rivers, canals, cities, towns, villages, buildings and yards, one acre in twenty,	39,040
Waste lands, forests, woods and impracticable land,	141,760
	<hr/>
Deduct	180,800
	<hr/>
Remains cultivated land	600,000
	<hr/>
Of the waste and forest lands, it is probable that the reclaimable part amounts to	100,000
	Of

Of the six hundred thousand acres of cultivated land, in which class I mean to include the pasture part of parks, I estimate one hundred thousand acres may be meadow and pasture, and five hundred thousand acres arable. The arable land may be reckoned, two hundred thousand acres of clay loam, or more friable mixed loam ; two hundred thousand acres of gravelly or sandy loams, or other mixed, including calcareous soils ; and the remainder, or one hundred thousand acres of light, sandy, gravelly, or other soils, which, though not perhaps wholly adapted to, are yet capable of producing turneps.

The farms of this county are of all sizes, from twenty acres to five hundred ; yet it must be acknowledged, that within the last twenty or thirty years the consolidation of small farms has been not uncommon : And indeed a farm of twenty or thirty acres is too small for the sole employment of a farmer, and only adapted to people retired from business and preferring to live in the country ; or to country-tradesmen, who, having other business, do not depend on the small farm for their main support. Farms of the smaller size are insufficient to pay a fair rent and maintain a family ; and, unless the occupier has industry and resolution enough to submit to working regularly for others, generally entail poverty on himself and family. Yet, I think, it would be a spur to steadiness, exertion, and industry, if a proper proportion of small lots of grass land, sufficient to keep one, two, or more cows, were added to tenements, and reserved for the more steady and industrious labourers, who might in service have saved money enough to stock such premises, and who, upon marrying, might leave principally to the wife the care of such stock ; such land not on any account to be broken up, except such portion of it, as shall be allowed for gardens.

The farms of Staffordshire are very generally, and with scarcely a single exception, employed in a mixture of both
pasture.

pasture and corn ; some occupiers inclining one way, some the other, according to circumstances, and perhaps in part, according to the disposition of the occupier. The seeds generally sown for laying land to permanent pasture, are, 1. Red clover (*trifolium pratense*) ; 2. Vetch clover (*trifolium repens*) ; 3. Trefoil (*medicago lupulina*) ; 4. Ray grass (*lolium perenne*) ; also hay seeds collected from the loft, in which every attentive person is as careful as he can be to make a good selection, by reserving the hay from the produce of lands the cleanest from weeds. In addition, many persons, with a laudable view to improvement, have attempted to introduce fresh grass seeds ; particularly first, the meadow or cow clover : but I believe there are not if any, instances here wherein it has not turned out to be a usual biennial clover.

2. Burnet (*polygonum sanguisorba*) has been sown by many persons of late years, and by some on a broad scale. I know it from experience to be a valuable addition to pastures, hardy, and strictly perennial. Cows prefer it to any other, and it is doubtless wholesome for them : sheep and horses do not prefer clover ; and it is by no means so productive as the best leaved red clover. A very attentive friend and neighbour of mine, who keeps a very large dairy, and has for some years back sown large quantities of this plant, is so very partial to it, that he would this year have sown ten hundred weight of the seed, could he have procured it. It is certainly a valuable mixture with other herbage, with which it but little interferes, drawing its nourishment deep from the earth by a long tap root. It is a native of some of the Midland Counties, particularly Rutlandshire, where it abounds spontaneously in common fields, road sides, and

upon commons wholly uncultivated, it is a very different plant to the meadow burnet (*sanguisorba officinalis*), springing out and flowering some months earlier. I have since found it indigenous in the Moorlands of Staffordshire, particularly on the Wever Hills, and between Wetton and Warflow.

3. Sainfoin (*medicago onobrychis*) has been tried, but has not succeeded, and the soil is probably not adapted to it.

4. Lucern (*medicago sativa*) has had several small experiments. It requires cleaning with a good deal of care for the two or three first years, after which you can scarcely destroy it. I had early this spring a garden bed of this plant dug under (being tired of it), which notwithstanding is now shooting out vigorously. There is some reason to dispute its superiority to red clover, either in quality or bulk of produce.

5. Rib grafs (*plantago lanceolata*) is also sown in considerable quantities, and by many approved as a good mixture with clover and ray grafs. There is good authority for asserting that cattle will not eat it alone; but it is believed to be a grateful mixture with other herbage.

None of the native individual grasses have, to my knowledge, been cultivated in this county, except the ray grafs before named, and the oat grafs (*bronus mollis*), though many of them are apparently much more worthy of it. In addition to the cultivated plants before named, the following is a list of our principal spontaneous pasture and meadow herbage, in which each species is placed in rank according to the writer's conception of its merit; but such superiority being matter of opinion, may possibly be varied and otherwise decided by future experience and observation.

1. Meadow grasses (*poa pratensis et trivialis*).

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2. Annual meadow grass (*poa annua*), a sweet and fine grass, but not very productive, might with propriety be termed *poa quadrans annua*, as it will produce and reproduce itself by its own seed four times a-year. Could the seed be procured in sufficient quantities, it is certainly well worthy of cultivation, producing in quick succession an infinity of blades of grass, and being a sweet and fine pasturage.

3. Meadow fescue (*festuca pratensis*).

4. Foxtail grass (*alopecurus pratensis et agrestis*).

5. Soft grass (*holcus lanatus*).

6. Dogstail grasses (*cynosurus cristatus et echinatus*).

7. Vernal grass (*anthoxanthum odoratum*); fine, sweet and early, but not very productive.

8. Rough cock's-foot grass (*dactylus glomeratus*); coarse but very productive, and by some much esteemed; probably makes good hay intermixed with the other finer grasses.

9. Water meadow grass (*poa aquatica*) grows very tall, to six feet high and upwards; extremely productive; very common by the sides of streams, in hedges, and sometimes in pretty broad patches on water meadows. Mr. CURTIS informs me this grass is cultivated in the Isle of Ely, and it is probably well worthy of attention in proper situations.

10. Meadow oat grass (*avena pratensis*).

The above grasses are certainly all well worthy of trial in cultivation; the following also are common in meadows and pastures.

11. Bent grasses of sorts (*agrostis's*, principally the *capillaris alba et stolonifera*). These, though valuable in meadows, are very noxious and troublesome in arable land, being the basis of that curse to the plough farmer, the black or beggarly couch or squitch grass. These grasses are so hardy, that they will grow in any soil moist or dry; and the more
land

land is run out, beggared, or impoverished by hard tillage, the more they will run in the root and abound.

12. Tall oat grass (*avena elatior*). This, though a troublesome weed in arable land, (being the knobby or bulbous-rooted couch grass) is yet probably worthy of cultivation in meadows, being very hardy, productive, and flourishing in all seasons; it makes good hay intermixed with other finer grasses.

13. Dogs, couch or squitch grass (*tritium repens*); not very common in meadows and pastures, but chiefly abounding in gardens and hedges. The common squitch grass of arable lands has been often erroneously called by this name.

14. Flote grass (*fistuca fluitans*); generally growing in water, it is a sweet and good herbage, and very productive. Many a poor old horse has been bogged in searching for this grass, of which they are remarkably fond. A botanical friend* has observed, that geese are very fond of the seeds of this grass, and well know where to look for them.

The other most common grasses are, Timothy grass (*phleum pratense*), hair grass (*aira cespitosa*), quake grass (*briza media*), brome grass (*bromus erectus, arvensis & sterilis*), meadow barley grass (*hordeum pratense*), c. zeping soft grass (*holcus mollis*): also in wet, boggy, or swampy situations, various sorts of sedge grasses provincially hard grass, iron grass, carnation grass (*carex*'s): these, upon draining and top-dressing their native bogs, generally give way to the more valuable grasses.

The other principal meadow herbage valuable for hay and pasturage is, 1. The meadow or cow clover (a variety of the *trifolium pratense*); the seed of which is professed to be sold under the name of cow grass.

2. Long-leaved perennial clover (marl grass of HUDSON, *trifolium flexuosum*); common in hedges and ditch banks in

* Dr. WITHERING.

the clayey soil in the parish of Blymhill. Being perennial, and growing spontaneously in strong soils, the Rev. Mr. DICKENSON highly recommends the cultivation of it in such soils mixed with common clover and ray grafs. This plant is also common here upon mixt gravelly loam, sometimes in shady, and sometimes in open situations ; but having a disposition naturally to propagate itself by running in the root, I am afraid its seed will not ripen in sufficient quantity for any considerable scale of cultivation : the attempt of raising its seed is however well worth making.

3. Trailing trefoil (*trifolium procumbens*) ; a sweet, fine and good herbage.

4. Bird's foot trefoil (*lotus corniculatus*) ; in all situations open and shady, moist and dry, apparently worthy of cultivation. A single attempt of mine to raise a garden bed failed ; the seed of my own gathering never vegetated.

5. Perennial tufted vetch (*vicia cracca*) ; excellent pasturage, and a good mixture in hay ; not uncommon in hedges and meadows ; highly worthy of cultivation. This perennial vetch is distinguished from the common annuals by its long fruit-stalk, upon which the flowers and pods are supported at a distance from the stem ; whereas those of the annuals are short and close to the stalk.

6. Meadow vetchling (*lathyrus pratensis*) ; in hedges and meadows ; common. For the cultivation of this plant a premium has been offered, I believe, by the Bath Agriculture Society ; yet there is reason to think that cattle are not fond of it, I having often observed it untouched on the hedge-side of a stocked pasture : it is probably most proper as a mixture in grasses for hay, and possibly eaten by cattle mixed with grasses.

7. Meadow burnet (*sanguisorba officinalis*); common and plentiful in some meadows; also growing very luxuriantly in cold and very poor wet upland, particularly on Bentley estate near Walsall, and between Walsall Wood and Cannock Heath: a hint from nature that it should be cultivated on such land, as it certainly should, if its seed can be preserved in sufficient quantity.

8. Meadow sweet (*spiræa ulmaria*); coarse, but not disesteemed by some. The farina or dust of the ripe blossoms of this plant, which is very abundant, is, I have been told, an excellent styptic, and has been used with great success in stopping hæmorrhages.

9. Cow weed (*chærophyllum sylvestre*) has an uncouth and weed-like appearance, resembling hemlock, but paler in colour; is very common in some meadows and pastures, and has been used as a pot herb. According to CURTIS, cows are so fond of it, that when a pasture is overrun with it, as is often the case about Dudley, they always turn them in to eat it up, as observed by Mr. WAINWRIGHT, in WITHERING'S Botany. It is very common about Wolverhampton and Wednesfield. Cows eat it greedily, and I believe it is wholesome for them.

10. Meadow sorrel (*rumex acetosa*); common in meadows. All sorts of cattle eat it, and I doubt not that its acid is grateful and wholesome to them, and I believe it to be good herbage.

11. To these I shall add the crowfoots (*ranunculus's*), so very abundant in our meadows and pastures, and which, tho' in themselves so acrid and pungent, are notwithstanding most certainly a grateful and desirable admixture. They seem intended as seasoners and correctors, and to be adapted to uses in the animal œconomy similar to that of salt, mustard, pepper and vinegar at our tables; to correct the flatulent or putrid :

trid qualities of the more palatable and luxuriant dishes on the great table of nature. It is said in WITHERING'S Botany of the *ranunculus acris*, that "cows and horses leave this plant untouched, though their pasture be ever so bare." I believe this to be only true of the flower stem, or when there is not a sufficient admixture of other more palatable herbage.

The following I consider as neutral plants, or such as are neither worthy the farmer's attention to encourage their growth, nor his efforts to destroy: the foliage of many of them is eaten by cattle without injury, either green or in hay, in common with other herbage.

1. Dandelion (*leontodon taraxacum*); very common; considerably diuretic; has probably a good effect upon cattle, from that quality, at their first going to grass.

2. Daisy (*bellis perennis*).

3. Daffodil (*narcissus pseudo-narcissus*).

4. Harebell, English hyacinth (*hyacinthus non scriptus*).

5. Fritillary (*fritillaria Meleagris*). This very curious and rare flower adorns in great profusion some meadows about one mile from Blymhill, in the parish of Wheaten-Aston, as observed to me by the Rev. Mr. DICKENSON.

6. Cowslip (*primula veris*).

7. Primrose (*primula vulgaris*).

8. Lady-smocks, several sorts (*cardamines*); principally the *pratensis* and *hirsuta*; the foliage probably wholesome food.

9. Wood or meadow anemone (*anemone nemorosa*); very common here in meadows; the flowers fold up in a curious manner against rain; the whole plant is acrid: when sheep that are unaccustomed to it eat it, it brings on a bloody flux, as observed in WITHERING'S Botany.

10. Goose

10. Goose grafs (*galium palustre* & *uliginosum*).

11. Bistort (*polygonum bistorta*); common in moist meadows; also in very high pasture ground at Essington, in the parish of Bushbury. The root is one of the strongest vegetable astringents, as WITHERING informs us. If it would tan leather it would be worthy of cultivation, the root being productive and the species prolific. This plant in some places wholly occupies large patches of ground, to the injury of better herbage.

12. Cinquefoils (*potentilla verna* & *reptans*).

13. Meadow rue (*thalictrum flavum*); in a meadow on my farm in considerable quantity.

14. Valerian (*valeriana officinalis*).

15. Orchis's, several sorts.

16. Meadow broot (*caltha palustris*).

17. Ladies mantle (*alchemilla vulgaris*).

18. Yarrow (*achillea millefolium*). Sheep and cattle eat it, and it is recommended for cultivation on poor land, by ANDERSON.

19. Restharrow (*ononis arvensis*); rather to be extirpated than encouraged, though cattle will eat it when young, and it is very productive. The roots of it are very troublesome in arable land, being strong, and almost stopping the plough. In some of the chalk counties I have observed a worse kind still, viz. the prickly, thorny, or spiny restharrow (*ononis spinosa*), but I have never found any in Staffordshire except the smooth plant first named.

20. Yellow rattle (*rhinanthus crista galli*).

21. Red rattle or louse wort (*pedicularis sylvatica*). This should rather have been classed amongst weeds or noxious plants, as WITHERING says of it, that if the healthiest flock of sheep be fed with it they become scabby and scurfy in a short time, the wool gets loose, and they will be overrun by

by vermin: it is, doubtless, a bad plant, but may be weakened or destroyed by draining the land.

22. Eyebright (*euphrasia officinalis* & *odontites*).

23. *Veronica's*, several sorts.

24. Purging flax (*linum catharticum*).

25. Centaury (*Chironia centaurium*).

26. White saxifrage (*saxifraga granulata*); on meadows in the Moorlands.

These are the most common, many others are omitted. Some of them have their known uses; to others no attention is paid, but what they claim from the beauty of their flowers; and perhaps, as Dr. WITHERING has observed, a display of beauty may have been in some measure the design of the Great Creator.

Weeds, or noxious plants, common in pasture and meadow land, which the farmer's industry should be employed in destroying and extirpating are,

1. Dock (*rumex crispus*); to be destroyed only by perseverance in rooting up.

2. Thistles of sorts (*carduus's*), particularly the *lanceolatus palustris* and *pratensis*: they should be cut off within the ground or rooted up.

3. Nap weed (*centaurea nigra* & *scabiosa*) should be rooted or cut up, being useless and unsightly.

4. Ramsons (*allium ursinum*), meadows at Horsebrook and elsewhere, gives a garlick flavour to milk.

5. Goose tansy, silver weed, or feathered cinquefoil (*potentilla anserina*); common in many pastures, but generally untouched by cattle; should therefore be extirpated to make room for better herbage.

6. Rushes of sorts (*juncus's*); a sure indication of stagnant water, and that the land wants draining.

7. White dead nettle (*lamium alba*).

8. Hog

8. Hog weed, or cow parsnip (*heracleum*). This plant (Variety 2. the *angustifolium*) is very abundant in an upland mowing meadow near Dudley Castle; and though I believe cattle will eat it without injury, yet it is certainly too coarse and weed-like to be suffered to abound in well managed land.

9. Wild carrot (*daucus carota*).

10. Dog's mercury (*Mercurialis perennis*); very common in the sides of hedges. WITHERING's Botany says this plant is noxious to sheep; which if true, some pains should be bestowed in its extirpation.

11. The common cursed or way thistle (*ferratula arvensis*); every where.

The leading features of improvement to be effected by agriculture upon meadow and pasture land seems to be,

1. By draining of all boggy, swampy, and morassy spots, either by open or hollow drains.

2. By improving the herbage where rough and coarse, either by weeding and top-dressing, or by pulverizing and seeding down with a judicious selection of proper seeds, and laying the surface in a form and disposition to clear itself of surface water, and receive future improvement.

3. By extending as much as possible the practice of irrigating the surface of all land capable of that improvement, with water judiciously applied, and properly taken off.

4. By top-dressing with the most ameliorating manures that can be procured.

5. By stocking at proper times, and with a properly mixed stock; by which management the herbage being closely bitten will be kept fine, and the surface not being trodden in or poached upon will be kept regular. There are few spots so barren or ungrateful which by this mode will not be made

useful meadow and pasture land. Considerable attention at present paid to these subjects by many spirited and judicious managers. The particular points above alluded to seem most capable of being extended are the three following.

1. Draining.
2. Irrigation.
3. Improvement of stock.

DRAINING.

OF this most essential improvement of meadow and pasture land, as well as arable, much remains to be done, though great exertions have been made in it of late years. The practice most approved here is, after having opened a sufficient number of ditches or main drains to a proper depth, to cut from and into them a number of drains of about fourteen inches wide at top, to four or five inches wide at bottom, and three feet deep; then to fill up these, first, with a small layer of heath or ling; secondly, with pebbles or rock stone one foot thick; thirdly, with another layer of ling; then to place the first spit or turf reversed upon the upper heath or ling; and to fill up and close the whole with part of the soil, and to spread the remainder of the soil on the surface of the land so drained. Close drains thus executed will last a great length of time, properly done, and if the open drains shall be kept properly cleansed out. Other methods are also used; as that of draining with hollow bricks; that of forming the bottom of the drain with a bearing on either side, and a narrower opening space below, with the first spit or sod of turf inverted and turned, and the drain filled up with the soil. These are practised with good effect; but the first-named method is most general.

approved, in which, where stones are scarce, wood is sometimes substituted. The improvement is generally reckoned to pay the whole expence in two or three years, and within my acquaintance is so generally practised, that there are few individuals who do not do more or less of it every year. This opinion is corroborated by others, particularly the Rev. Mr. WRIGHT of Bradley, who says, " more attention has been paid to that important article of draining lands within the last twenty years, than in centuries before. Covered drains are commonly used." Attempts too have been made to tap springs, by boring into them, by Mr. ELKINTON and others, and sometimes with success. Mr. BRADBURN from much experience thinks the best method of under-draining to be with hollow bricks, which he says are more durable, and safe from being injured by vermin, than any other method.

IRRIGATION.

IRRIGATION, or the improvement of land by watering, is, or may be, a very important and extensive part of agriculture; and though the advantages to be derived from it are generally admitted and well known in this county, at least by all intelligent farmers, yet it is by no means in general carried to the extent of which it is capable; many streams being suffered to glide quietly down their own channel, which might easily be drawn over the adjoining lands, to their great improvement. This omission is in part owing to neglect; in part to the jealousy of millers and other persons interested in the streams; and in some degree to the best methods of extending this application of water not being

generally and sufficiently understood. The industry of many individuals is, however, very properly and successfully exerted in this very commendable species of improvement.

Respecting a system for irrigation, no general one can apply to particular cases. Different modes of spreading the water must be adopted, according to different circumstances of situation and form of surface. In all cases where a stream naturally falls down a valley, and the sides of such valley consist of easy and regular declivities, the best way undoubtedly is to draw a sufficient quantity of water nearly upon a level, along a main carrier ; such water to be let out of the said main carrier at pleasure, by sluices constructed in different places in the sides thereof, into floating gutters ; such floating gutters being cut on a level along the sides of the declivities, one below another. These floating gutters will collect the water from the spaces of land above them, and, if well constructed, deliver it very regularly upon the spaces below each of them respectively. The watering in this case will require very little attendance, except that of opening and closing the sluices in rotation, so as to irrigate different parts of such land successively. The gutters too will require an annual cleansing or scouring out, otherwise they will choke, and grow up with grass.

The particular mode of action or operation by which land is benefited by watering, has not perhaps yet been satisfactorily explained : yet it is an established and well known fact, that all waters (except such as are highly putrid) produce a good effect upon land, in some degree proportioned to their rapidity or briskness of motion. Thus common water suffered to stagnate upon, or dribble in small quantities over land, will encourage the growth only of rushes, *carex's* (segrasses), and other coarse *aquatics*, and weaken if not destroy the finest and most valuable grasses. The same water driven
over

over the same land with a brisk motion, and the surface left to dry at intervals, and exposed to the sun and atmosphere, will have a direct contrary effect : the valuable grasses will flourish, and the aquatics be weakened or destroyed. Hence it should seem, that the good effects of watering are in part produced by mechanical operation, by moistening and tendering the surface ; which circumstance, combined at intervals with the effects of the sun and atmosphere, brings into action the latent principles of vegetation in plants ; which principle would have lain dormant, under the influence of chilling or stagnant water ; or would have been locked up by the matting of turf on the surface, had not such turf been softened, and made easily penetrable by moistening its surface. The coarse aquatics being hardier, vegetate in a less degree of heat. They seem intended by nature to fill up those vacancies which are yet unprepared for the production of the more valuable tribes, upon this principle in her vegetable economy, that a bad plant is better than none : yet upon the proper application of human industry they always decline, and give way to those of superior value.

Every one knows the necessity there is (previous to improvements by irrigation) of discharging the stagnant water from, or from near, the surface of all lands intended to be so improved, by hollow drains or otherwise.

As the benefit to be derived from irrigation depends so much upon the watering being effected with a brisk motion, and not continued for too long a time, the great desideratum in this species of improvement seems to be the introduction of reservoirs constructed so as to contain large quantities of flood water ; which water so collected may be successively and at pleasure distributed upon any land below its surface, and continued with such velocity, and for such length of time, as may be thought proper.

This

This idea, as applicable to agriculture, is I believe novel, and may be treated as visionary; but I am so thoroughly convinced of the great advantages to be derived from it, that I will venture a prediction of its being in some future time practised to a great extent. The practice will be much facilitated by the construction of dams being so well and so commonly understood, in consequence of the number of navigable canals which have been, and are still executing. A reservoir of a few acres, and of two yards average depth, may be constructed, at from ten to twenty pounds per acre, according to circumstances of situation. Such reservoirs as a fishery (under proper management) would be equal or superior in value to an equal breadth of land, and the surface water to a certain depth may be drawn down for the purpose of irrigation at pleasure.

Upon this subject of water the following extensive idea is thrown out by an ingenious gentleman *, high in his profession as an engineer; which is, that nine parts in ten of the waters of the kingdom at present run away in waste, great parts of which might be usefully employed; nay farther (putting expence out of the question), that every stream in the kingdom may be made to run equally through the whole year. This position, however extraordinary, is easily demonstrable; for if upon any given stream one or more reservoirs be made capable of containing its flood water, and through the dam or dams be laid a pipe or pipes, whose apertures will just discharge the average produce, the business is done. And though there may be no probability of this business being ever brought to so great a nicety; yet from hence some idea may be formed of the prodigious extent to which improvements by water may be carried.

* Mr. JESSOP.

With this subject, and that of forming reservoirs for the purposes of agriculture, is connected another, of great importance in domestic and commercial oeconomy; namely, the having an extensive command of the application of water to all mechanical purposes wherein such application will answer better than for irrigation of land, and thus, as it were, arresting every drop of water that falls from the heavens, and rendering it in the most extensive way subservient not only to the immediate subsistence of man and beast, and the improvement of land, but even having the residue solely at command for the purposes of shortening manual labour: such system would certainly be an important addition to the powers required in many of our mechanical operations, and of great importance in a manufacturing country.

A copy of part of the above being sent to Mr. JESSOP, I have received from him the following Paper, which I had never seen before.

OBSERVATIONS ON THE USE OF RESERVOIRS FOR FLOOD WATERS.

THE rapid improvements which have for some years past been made in the agriculture and commerce of this country, and the happy effects derived therefrom, naturally excite a desire to investigate every means by which they may be continued and increased.

Among the many causes which have combined to promote our prosperity, the facility of intercourse by inland-navigation is a great and leading feature. All unite in admitting this as a general position; but many, from private motives, or mistaken opinions, have too often prevailed in preventing the execution of useful projects, which, if they could have been

been effected, would have greatly contributed to the national benefit derived from those already established.

Among the obstacles that stand forward, none are more conspicuous, nor so generally urged, than the want of water in dry seasons. It usually happens, that where canals are most wanted, manufactures or agriculture having already taken possession of the ground, and occupied the streams of water, it is plainly to be foreseen, that, unless some means are devised to reconcile this competition, those desirable improvements must be crippled in their growth, and stop long before the age of maturity.

It can hardly have escaped any one's observation, that streams of water used for the purpose of working mills, or the more valuable purpose of watering meadows, in the few instances where this has been practised, while they have a scanty supply in summer, they generally discharge in winter such superabundance as frequently to do material injury.

There are, in some parts of this island, exceptions to this general position. Where the soil is porous, and the substrata so open as to absorb the rains as they fall, there are no floods: the pores and fissures of the earth form reservoirs or regulators to the streams; they preserve the winter waters, and so equalize the discharge, that there is but little difference between their winter and summer state; but in clay or other similar soils, so little is absorbed, and so much suddenly glides off from the surface, that the extremes of scarcity and exuberance are the necessary consequences.

It is now well understood, that all natural springs derive their supply from the waters of the atmosphere; and they may fairly be considered as the discharges of natural reservoirs; it is immaterial whether those reservoirs may be composed of large cavities, or minute fissures.

If

Leaving expence out of the question, it is possible to conceive (however extravagant the idea may appear), that the waters of all rivers might by art be nearly equalized throughout the year: but it will be sufficient to prove that this is practicable, if applied to small rivulets or brooks, particularly where Nature holds forth a temptation, by furnishing deep ravines, or capacious hollows on the surface of the ground, capable, at a moderate expence, of being made to contain large quantities of water.

We are taught, from the simple instinct of animals, the provident lesson of storing up the superabundant supplies of one season for the wants of another. Necessity has compelled mankind, in many countries, to follow their example. In hot climates, the inhabitants could hardly exist without storing up the waters of winter for their use in summer *.

There are instances in this country where canals are in want of water in summer, while the brooks that supply them discharge floods, in winter, in one day, sufficient for the supply of the whole year.

Those who entertain doubts of the practicability of making reservoirs sufficient for the supply of canals, state their objections under three heads: the expence; the want of sufficiency of water; and the uncertainty of making such reservoirs to retain it.

When the necessary magnitude is ascertained, the expence is a subject of plain calculation; and it is easy to determine whether the project, to which it is to be applied, will bear the expence. There have been several instances, where the expences of repelling an opposition from mill-owners to a

* At Alicant the King of Spain has made a reservoir, the water of which, for the uses of summer agriculture, bring him in a revenue of 2000*l.* per annum.

Bill in Parliament, would have been more than enough to have made sufficient reservoirs.

Whether they can be filled with water may be known before they are undertaken, by an enquiry and measurement of the discharge in winter.

The waste of water from a reservoir is in two ways; by exhalation, and by leakage. The first, in a dry summer, would consume about nine inches in depth from the surface; the making the head nine inches higher than otherwise necessary would compensate for this. The leakage would be in few cases (where it would be prudent to attempt the scheme at all), even upon small streams, more than equal to the summer supply; and whether the water may be discharged by leakage, or by a pipe or artificial discharger, if they shall both discharge into the same channel, is not very material. In clay or other soils where rushes grow, there will be no sensible leakage; and in soils more open, the pores of the soil would be an extension of the reservoir; and in cases where it might be necessary to discharge constantly from the reservoir a quantity equal to the summer stream, it would for a while supply that discharge.

Even in extreme cases of leaky soils, if there were any sudden floods, the reservoir would at least prevent their sudden discharge; but where the soil and strata are so close as to absorb little, and cause sudden floods (and it is to these cases that reservoirs are peculiarly applicable), there is little reason to apprehend leakage.

The writer of this has lately had an opportunity of experiencing the effect of a small reservoir (not yet completed) as a regulator to a stream. It covers at present about twenty acres, and is made on a small brook which, in dry seasons, does not furnish more water than would run through an aperture of an inch in diameter; but is sub
jet

ject to floods, which can hardly be discharged by a pipe of three feet in diameter.

There is fixed under the head of it an iron pipe of six inches bore, which during the last winter has almost constantly been open; and discharged a quantity unequal no otherwise than from the difference of pressure by the rising and falling of the water in the reservoir at the different intervals of rainy and fair weather; and when the reservoir shall be enlarged, on the one hand the meadows below will never be overflowed, and on the other hand the reservoir will furnish, in the dry part of summer, *at least twenty times* the quantity of water daily that the brook would otherwise afford.

There is now depending in Parliament a Bill for making a navigable canal through the Vale of Belvoir to the Town of Grantham, where the soil is almost wholly a firm tenacious clay, and will not require above half the water to supply it, which is necessary for canals in other instances.

The country is subject to an extreme scarcity of water in summer, and to great superabundance in winter; and every circumstance is favourable to the intention of supplying the canal by artificial reservoirs. It is therefore earnestly hoped, that those who might be induced by their doubts to repel the intention, under the idea, that because no canal hath hitherto been *totally* supplied by reservoirs, therefore it must be impracticable, will give some credit to those, who, on well-grounded information, have advised the measure; and that they will suffer it to be effected.

It is hoped, that the execution of a canal upon this system may tend to promote the extension and continuance of those improvements in commerce and agriculture, on which so greatly depend the prosperity of this country; and which,

in many instances, already have been checked, by neglecting to use the assistance of art in remedying the defects, or rather in using or improving the bounties of Nature.

Written in May 1792.

W. JESSOP.

Farther, respecting the particular subject of applying water to the improvement of land, though this practice is by no means carried to the extent of which it is capable, and large quantities of flood-water are lost (which in the tenacious clay soils that abound over a considerable part of this country can be retained in no other way than by artificial reservoirs), yet considerable exertions are made in this business by many persons, and omitted by few who have the means of doing it; almost every occupier who has a stream through his meadows, bestowing considerable attention to it in floods. Amongst others, my neighbour Mr. MILLER, of Dunstall near Wolverhampton, has upwards of one hundred and eighty acres of land capable of irrigation; and when water abounds, it is applied to this purpose in various ways. Upon his farms are two mill-ponds, and the mills kept in use in his own hands. The jealousy of the millers below upon the same stream prevents his applying it to this purpose at any other time except when there is plenty of water; on which occasion he often rakes up the mud of his mill-ponds, by small harrows dragged in them to and fro by ropes; which mud is by this means sent in the water over the land; which water is drawn in floating gutters to every part of the land the level will admit; and the consequence is an early and plentiful hay-harvest, often after spring-grazing. There are few instances in this county of land formed artificially for the purpose of receiving water by irrigation, by being laid in broad ridges; and the few I

have seen would certainly induce any attentive person to reject the method. The soil is seldom left equally upon the land; and the length of time lost before a good turf can be restored, is a great objection to the practice: and as the water may, in almost all cases, be as well applied upon an even surface, variously disposed, as land often is by nature, I think such mode of application is to be preferred to breaking the turf, and giving it a new form. Upon the estate of LORD BAGOT, adjoining Tedbrook, I observed a considerable tract of formerly morassy land, after draining and being made found, prepared for irrigation in a very ingenious way; without altering the natural disposition of the turf, the business effectually done, and meant to be gradually and progressively extended down the valley. At Stoke, near Stone, about fifty acres of meadow land are watered in a very superior style, from the Trent and from land floods, by Messrs JENKINSON. Here the main gutters or carriers are constructed with some fall down the land; and from them are cut sideways a proper number of floating gutters upon an exact level. Below each of these floating gutters, in the main carriers, are fixed wooden trunks laid in a puddle, with a sliding paddle to each; by means of which the water is either kept back along the floating gutters, and so forced upon and over the land, or drawn down the main gutters and off the land at pleasure: the gutters are generally constructed deep enough to drain the land, when not used for floating. These meadows have been much improved by this practice, which commenced about seven or eight years ago; before which, I was informed, they were of little value; but at present, after spring-grazing, they mow a full crop of hay, and are improving every year.

STOCK.

THE profitable stock of the Staffordshire, and generally of all English farmers, consists of, first, horned cattle; secondly, sheep; thirdly, horses; fourthly, hogs.

First, Horned cattle. The horned cattle of this county are very generally of the long-horned breed, varying in value and quality in proportion to the attention of the breeder and his resources for keeping. It is a dogma almost established into a maxim by many experienced farmers of the old stamp, that "all breed is put in at the mouth;" whilst the modern breeder upon the BAKEWELLIAN system will boast that the merit of his breed consists in their capability of doing well upon the least quantity of food of the ordinary kind. There is no doubt but both parties have wandered beyond the true bounds of nature; as all good stock must be both bred with attention and well fed; and perhaps it is necessary that these two essentials in this species of improvement should always accompany each other; for without good resources for keeping, it would be in vain to attempt supporting a capital stock, and with such resources it would be absurd not to aim at a breed somewhat decent in quality. The cattle stock of this county hath for years back been (and are at present) in some degree improving; but all general improvements must be gradual and a work of time. It is not in the power of every farmer, or even of the generality of them, to pay the prices for prime stock; and if they could, the improvement of their meadows and pastures should go hand in hand with that of their stock. Mr. MILLER's idea, which I cannot but approve, and wish to see in practice, is, that gentlemen of fortune should procure, for the use of their tenants, the best bulls, rams, stallions, &c.

This,

This, if they did not chuse to do *gratis*, might easily be thrown upon a plan to indemnify expences, and would tend very much to facilitate the improvement of the stock of the smaller farmers.

The great objects in the produce from horned cattle being, first, milk; second, beef; the uniting of these two products in the greatest quantity from the least food or produce of land, seems the ultimatum of breed. It has often been observed, that cows with the best disposition to fatten, not only give the least milk, but soonest go off their milking; whilst a loose, open, ill-made cow will both give a larger quantity and continue it longer; but is not so easily fatted, nor without much more time: the uniting of these two qualities in the highest degree is therefore the true desideratum of breeding. The cows of this county will generally give from eight to twelve quarts of milk at a meal (and in some instances more), and two meals *per* day; but this only, in the prime season of grass, May and June; they decline afterwards to three fourths, one half, and one fourth of that quantity, and for two or three months are quite dry. Value of a store cow in calf, or with a calf, generally from seven to twelve guineas: when fat they will weigh from seven score (one hundred and forty pounds) to twelve score (two hundred and forty pounds) the quarter; and are worth in that state, from eight guineas to twenty guineas each; and in some few instances their weight and value have been much greater.

It is said that five hundred weight of cheese *per* season will be sometimes made from a cow, but I believe in general the produce will be nearer half that quantity. Dairies extend from ten, fifteen, and twenty cows to forty, and in a few instances to more, even to seventy cows.

No.

No great number of oxen are fatted in this county; the few bred therein are generally sold at the neighbouring fairs, and driven to fat nearer the metropolis.

The above account is meant to apply to the general cow stock of the farmers of this county; some few instances are to be found where the breed has been carried to a much greater perfection, especially in carcase. The following instances of capital or superior stock came under my observation.

May 20, 1794, viewed the cow-stock of Mr. PRINCEP of Croxhall. His land is mostly but not wholly in Derbyshire, and therefore more properly belongs to the Report of that county. I shall just observe, that they are of the long-horned breed, and by long attention have been brought to a very high degree of superiority; large, thick, heavy, and well-made, with a pretty good flow for milking, and such a disposition to fatten, that Mr. PRINCEP observes, the young stock are obliged to be almost starved by short pasturage, otherwise they run fat and never stand the bull: the cows give upon the average about eight quarts of milk each, which the owner thinks equal, from its superior quality, to a much greater quantity from inferior breeds. Mr. PRINCEP's bull named Bright, which always has and will invariably be kept for his own stock, is a majestic noble animal; large, thick, heavy in the valuable points, with the least imaginable proportion of offal; with a skin handling soft and sleek. This majestic animal is so gentle and docile, that three or four persons at once may handle him without the least sign of ferocity or even notice on his part. Bright-Eye, the son of Bright, now three years old, is a beautiful and most complete animal, and it requires a person of superior skill to that which I possess to find a single fault in him.

At Fisherwick, LORD DONNEGAL's, are also some very fine large and well-made cows of the long-horned breed, and pro-

milking well for milking. An ox was fatted here, (of Mr. PRINCEP's breed) and slaughtered in the spring of the present year, 1794, of which the following are particulars:

Weight of the four quarters, 1988 lb.

Ditto of tallow, 200

Ditto of hide, 177

This ox was worth fifty guineas: another, very little inferior, was slaughtered for the use of his Lordship's family the Christmas preceding.

At Blichfield, the seat of LORD BAGOT, the cow-stock, both his Lordship's and the steward's (Mr. HARVEY's), of the long-horned breed, are very superior, having been for many years crossed from the stock of the first-rate breeders. The dairy is a great object in this neighbourhood, in which cheese is the principal article, though a good deal is done in the feeding way. In his Lordship's pasture I observed a good many Scotch bullocks, as well as some very fine oxen of his own breed.

At Teddesley Park, Sir EDWARD LITTLETON's, the cow-stock is very superior; a few of the cows may rank with the best in the county: they are long-horned and good milkers, and each has a heavy and well-made carcass: here is also a yearling bull, beautiful both in make and colour, and of a good size, with some very good feeding cows and oxen.

Fine large and good cows are to be found in the possession of many farmers all over the county. At Mr. HUSKISON's, at Oxley near Wolverhampton, there have been two recent instances of cows bred on the farm and fatted there to upwards of eighteen score the quarter: the last, slaughtered in the present spring, Mr. HUSKISON informed me weighed three hundred and seventy-four pounds the quarter. These cows paid the butcher forty guineas each; and there are now many good cows on that farm, and a bullock of

the breed of the above cows which promises to be very large and heavy.

My neighbour Mr. MILLER of Dunstall has the largest and best dairy that I know in the county. The number of his milkers are upwards of seventy, mostly of the long-horned breed; with six or eight cows without horns. The main object is cheese, of which at least four hundred weight is made per cow. Early in the spring he fatts calves for the butcher, and they are sold at eight or ten weeks old at three or four guineas a-piece, and sometimes for more. The cows, when taken from the dairy, or when accidentally barren, are also fattened for the butcher upon the farm, and sold from ten to twenty, and sometimes twenty-five pounds each, and seldom any are sold in store order, or in any other way. Mr. MILLER, in his cow management, has two main objects in view, milk and beef; in pursuit of which the carcass and the milk-bag are equally attended to; and the cows here are generally of good size, good milkers, and well-made, with a disposition to fatten. The dairy too is managed in a first-rate style. Mr. MILLER has a large breadth of land capable of improvement by irrigation, of which he seldom fails to make the best advantage. This, by furnishing an abundant supply of winter keep, enables him to maintain not only the above number of dairy-cows, but also a considerable stock of young cattle.

The cows of this neighbourhood are of various colours; red, white, black, and party-coloured; but the red, with or without streaks or patches of white, are most prevalent; and the cows in general of the county are better or worse in proportion to the resources of the farm they live on, for hay and pasturage. Those farmers, perhaps, who have not natural meadows, or streams of water to improve them, do not make cow-stock an object of much attention; and indeed, notwithstanding the plausibility of the theory, that a

well-bred beast will do well on the worst soil, it will seldom be found, in fact, that good stock exists any where but where good keeping is found; and that to maintain and improve such stock, the improvement of meadows and pastures must be a primary object, and a supply of good summer and winter provision for such stock must be secured before success can be expected in improving the breed: and farther, that stock and the land on which they feed should have some analogy in quality, seems in part owing to physical as well as natural causes; for on a poor soil the occupier being, as it were, poverty-stricken, will have little of that energy, spirit of enterprize, and exertion, which are necessary towards insuring success in all attempts towards improvement; the necessary expences towards which are only to be born by those in easy circumstances, and which will seldom be the case with tenants at rack-rent on poor land. The next step towards improving stock, after providing for them the best keep circumstances will admit, is certainly by a selection of breeding stock; but this must be done by degrees, for the pecuniary circumstances of but few will admit of a total change. How much soever they may disapprove of what they have in possession, they can only reject a few of the inferior: this, however, is in their power, and by always selecting the best for breeding and rearing, improvement will in time be effected. Great improvements in cow stock are doubtless to be made by a proper selection of the best heifers in carcass and milk bag for breeding stock, but more particularly by a judicious choice of the bull; a principal mode to improve the stock on a farm. As what is called prime or first-rate stock is in but few hands, and the owners generally ask higher prices than farmers in general can afford to give, it would certainly be a laudable effort if the owners of estates, by themselves or their stewards, would procure first-rate male animals for the best stock only

their tenants and neighbourhood, even if so much a-head were paid as would indemnify the expence; or if encouragement could be given by any public measure, by bounties, &c. &c. under the direction of the Board, for keeping the better sorts of each in regular districts, it would be a salutary plan, and might have a tendency to the improvement of live stock; and it is only by some such or similar efforts, that the highest improvement to which live stock is capable of being brought can be accelerated and effected.

SHEEP. The distinct native breeds of sheep of the county of Stafford are as follow :

First, The grey-faced without horns, with fine or cloathing wool. Secondly, The black-faced horned, with fine wool. Thirdly, The white-faced without horns, with long or combing wool. Fourthly, The mixed common or waste land breeds, Fifthly, The pasture sheep of different breeds and crosses.

First, the grey-faced without horns, are the native breed of Cannock Heath, Sutton Coldfield, and the neighbouring commons. The distinguishing characteristics of this breed are, in general, grey faces, lighter or darker, varying from white to black, with all the shades of colour between. The legs of the same colour with the face. The wool fine, closely and compactly covering the carcass, without horns, of a moderate size. Those from a sound part of the walk, and from a managing master, have a good disposition to fatten, and produce mutton at the table equal to that of any breed in the kingdom. The better breed of these sheep very much resemble the breed of the South Down, and are, doubtless, originally from the same common stock; and perhaps the superiority of the South Down to some of the best Cannock Heath and Sutton Coldfield flocks is very questionable, and cannot readily be admitted. The general fault of this breed has been the want of thickness in proportion to their length. Sir Edward Littleton, with a patriotism and public spirit highly

Highly commendable, has for several years back been setting the example of improving this breed, by crossing with Ross rams; by which the carcass has not only been thickened, improved in form, and increased in weight, but the wool improved in a very high degree, so much that his wool of 1792 was sold (as I was assured by Mr. HALL the steward) at twenty-four shillings the stone of fourteen pound; that of 1793, and of the present year, 1794, remaining unsold. They are now, June 9, washing the sheep in preparation for this year's shearing, and some of the neighbouring flocks are sheared.

Mr. HALL believes he could sell the two years wool at twenty-one shillings the stone, which is eighteen pence per pound, though fourteen per cent less than the last price. Sir EDWARD's flock consists of several hundreds of sheep: the ewes fatten from twelve to sixteen pound the quarter, and the wethers from sixteen to twenty pound. Many of Sir EDWARD's tenants have pretty closely followed his example, and much improved their flocks by a careful selection of rams. The number of sheep kept on this side Cannock Heath is very considerable; the common being now in many places perfectly whitened with them. It is to be remarked, that this side of the common is amongst the best of the whole walk of twenty-five thousand acres. The soil sound, and of a pretty good staple the herbage tolerably good in the open spaces; and less encumbered with heath and rubbish than most other parts of this waste. Respecting disposition to fatten, there is no reason to believe the sheep here inferior to any other breed; the ewes and lambs are often taken into pasture early in the spring, when, if sound sheep, every lamb will go to the butcher, and every sheep follow in the course of the summer. A few years back I bought a lot of ewes and lambs at Cannock Fair, unthorn, May 8, at nineteen shillings per couple, every
lamb

Lamb of which was sold to the butcher before Midsummer at from twelve to fourteen shillings ; and the ewes might have followed about Michaelmas, but, for the sake of advance in mutton, were kept in turneps till January following, and sold at a guinea each, which is a profit not more than common. These sheep, which, kept in pastures and crossed with strong rams, make the pasture sheep stock of many farmers in this county, are very strong sheep, and are preferred by their owners to the Leicester breed ; but I think the improved Leicester breed much superior, and that they should have the preference from all such farmers as have no common right ; but the native breed crossed, thickened, and improved by degrees, will probably be much superior, and better adapted to the walk than any thing that could be effected by a total change of breed : and that the native breed is capable of being improved, is already demonstrated by the successful attempts here of Sir EDWARD LITTLETON, of some of his tenants and neighbours, and on Sutton Coldfield by those of Mr. FOWLER and others. If any gentleman who is a stranger to this country should wish to have an idea by ocular examination of the sheep of these commons, he should by no means trust to a chance ride upon the wastes, where perhaps he may meet only with the breed of the last century, the property of slovens who never gave themselves the trouble of a moment's consideration about improving their flock, but should enquire for some respectable sheep-master. It is farther to be observed, that much the best sheep land on this great common is on the west side towards Teddesley, and on the north towards Rudgeley and Beaufort, in which the neighbourhood of Hedgford must also be included large tracts of the south and east parts ; being cold, barren and wet, in want of draining, and covered with little but heath, whortleberries, lichens, and mosses.

The Sutton Coldfield sheep are doubtless from the same original

original common stock with those of Cannock Heath, but have been pushed to a larger size and weight. Mr. FOWLER of Erdington, who, though in Warwickshire, is very near the borders of this county, and summers several hundreds on the Coldfield in either county promiscuously, was so kind as to shew me his own and his neighbours flocks. His rams are stout, broad-backed, wide on the rump, and well-made, with fine wool to the very breech : the largest of them would, I believe, fatten to more than thirty pounds the quarter, and the smallest would be considerably more than twenty. Great attention has been paid for several years past to improving this breed both in wool and carcass, and the principal farmers have endeavoured to excel each other in these particulars.

Mr. FOWLER thinks the breed is now pushed rather too far in bulk and weight for the pasturage of the common, or even of the neighbourhood, unless they are driven into better land for fattening. The following particulars he gives me.

“ In general the ewes will weigh, when fat, from fourteen to eighteen pound the quarter, and the wethers from fifteen to twenty and sometimes much more. About two years since I had a true Coldfield-bred wether sheep which weighed thirty-two pound per quarter. About eleven years since I turned, as usual, about the first week in May, my ewes and lambs to the common : in August I took the lambs from the ewes, and kept them in the inclosures about fourteen days ; afterwards I turned forty of my wether lambs to the common again, and kept them there winter and summer, without ever putting them to any other keep, some of which I sold with other Coldfield sheep at nine years old for forty-seven shillings each : their chief support in winter was on heath or ling.

“ The average price of wool for the last seven years, which I have sold, is thirty-three shillings and eightpence per tod.

·todd of thirty pounds, and I think the average weight per fleece is three pounds each.

“I think about 11,000 sheep are kept in summer on that part of Sutton Coldfield which is in Staffordshire, and which contains about six thousand five hundred acres. Many more might be kept if the rabbits, now in abundance upon about one thousand five hundred acres of this common, were destroyed.

RICHARD FOWLER.”

Mr. FOWLER is clearly of opinion, that pushing or increasing the size or bulk of sheep, by improving their pasturage, or removing them to a better pasture, does not at all tend to injure the staple, or degenerate the fineness of cloathing wool, provided due attention be paid to selecting the finest-woolled rams.

I have farther to observe, that Sutton Coldfield is but a barren sheep-walk; containing in some large tracts scarcely any other plant than heath; in other places, fern, gorse, whortleberries, and rushes, with grasses in small proportion.

Secondly, The black-faced horned sheep, with fine wool, are peculiar to the commons on the west of the county towards Drayton in Shropshire, particularly Maer Heath, Ashley Common, and the other wastes in that neighbourhood. They have black and rather long legs; are light in the carcass: the rams are horned, and have been bred, I apprehend, with little attention, and are certainly capable of great improvement, especially in the thickness and form of the carcass. I think them in their present state much inferior to the grey-faced polled last described; their walk, with the herbage thereon, is, however, poor, and ranks with the worst parts of the commons before mentioned.

Thirdly,

Thirdly, The white-faced polled, with long or combing wool, considered as occupying waste or unimproved land, are peculiar to the east parts of the Moorlands. Upon the calcareous or lime-stone bottom they are strong heavy sheep ; and I think the most valuable and best sheep on waste land in the county : inferior to the new Leicester, as being much heavier in the bone, and coarser in make ; but, by proper crossing with well-made rams, may be improved into an excellent breed of sheep.

Fourthly, The mixed common or waste-land breed consists of the sheep upon the wastes, or upon the uncultivated inclosures, in the west part of the Moorlands, and on the grit or gravel bottom. These are much inferior to those on the lime-stone or calcareous ground, and are indeed of a very different breed. These appear to have originated from the ancient breed of the Moorlands, continued without attention, and have some white, and some grey or dark faces, with legs generally the same colour : some with and some without horns : the wool too coarse to be called cloathing, and too short for combing wool. The walk on this west part is inferior to the other, as being in part composed of peat moors, on which sheep are, doubtless, subject to rot. The breed is nevertheless capable of being much improved by attention in selecting rams, which appears to have been in a great measure neglected.

In the mixed breed, too, may be included the sheep upon the walks and commons in the south of the county ; as on Clent hills, the commons near Stourton, Swindon, and Wombourn, Kinver Edge, &c. the sheep on which are a mixed breed, not deserving commendation ; apparently bred with little attention ; with faces of all colours, white, grey, and black ; some with, and some without horns : the wool is tolerably fine, and of the cloathing sort. Some of the rams

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have

have large horns, as heavy as their heads; and even the young lambs often have a strong horn growing with great luxuriance. This propensity to large heavy horns ought, I think, to be condemned. A heavy horn, doubtless, requires nourishment from food, as well as the carcass, and when full grown is of no value. If sheep are to be bred with horns, the horns should be fine and slender; and rams with such only selected. But I must confess myself partial to sheep without horns: for I conceive a sheep's horns to be of no service whatsoever, even for defence; and so far from ornamental, that the animal appears handsomer without them.

Fifthly, Amongst the pasture flocks of different breeds and crosses, in regular flocks, or as stock yearly changed, I first name the Leicestershire breed; of which there are many regular flocks in different parts of the county. They may be divided into two sorts; the old and new Leicester breeds. The old Leicesters are well known, as large thick heavy sheep, with long combing wool: the new Leicester breed is a refinement upon the old by crossing with a finer-boned and finer-wooled ram. These are now established in various parts of the county, and increasing in other places. The old Leicester breeds are crossing with the new, which bids fair to produce a very respectable breed; there being many instances in which the old breed were become too coarse, and the new too fine. Amongst the Leicester flocks that I have seen or examined in this county, I shall notice the following, rather in the order in which I have seen them, than from any other reason. Mr. PRINCEP's flock, which I saw in the field, and also under the hands of the shearer, are of the new Leicester breed, and very respectable. Some other flocks belonging to LORD BAGOT's tenants, I saw and examined, particularly some belonging to Mr. HARVEY, his Lordship's steward. This breed, introduced into this neighbourhood

bourhood a few years back, is gaining ground fast, and is supposed by many, with whom I am disposed to concur, to be the best pasture sheep stock in the kingdom. This superiority consists, or is supposed to consist in this: that the pastures may be stocked much harder with these than with any other stock of equal weight; as they are always fat, even when suckling lambs. Some very good rams of this breed, worth from five to ten guineas, either to purchase or hire, are on LORD BAGOT's estate, and in the neighbourhood, particularly in the hands of Mr. HARVEY and his brother. The ewes full grown will weigh from twenty to twenty-five pounds per quarter. Wethers at two years old, at which age they generally go off, about the same; but when kept another year, they will rise to thirty pounds per quarter. The fleeces weigh from seven to ten pounds: the price of wool for the two last years has fallen from one shilling to eightpence per pound; the present price does not exceed eightpence. I have observed this year, that the lambs from a ram of this breed were lambed much easier than many others, particularly than those from a ram of the old Leicester breed the preceding year. This fact is well known to every one acquainted with my flock: the lambs of 1793 were very generally obliged to be drawn away by force from the ewes. The lambs of 1794 from the same ewes were produced as generally without any assistance: the ewes were in equal condition in 1794 as in 1793. I attribute this chiefly, or wholly, to the form, as the ram is finer in the neck and shoulders than a coarse-made sheep.

These sheep, as well as I can describe them in words, are fine and light in the bone; thick and plump in the carcass; broad across the loin, with the back bone not rising into a ridge, but sinking in a nick, and as it were a double chine of mutton rising on either side; fine and clean in the neck and

this disorder; but I cannot find by any well-authenticated account, that any specific for the cure has yet established its character upon the basis of experiment. The few opinions which I have received respecting the cause and cure of the rot are as follow.

The Rev. Mr. WRIGHT tells me, " that the rot is supposed to be occasioned by the wetness of the season, more than by the nature of the soil on which the sheep are depastured."

Mr. WEBB says, that " sheep are most subject to rot on low flat grounds affected by land floods. But possibly the rot may be occasioned by the licking-up of some insect or egg that is frequent on low wet lands; yet I have known sheep kept upon wet meadows that are subject to floods, without injury."

He knows of no means used to prevent the rot in sheep, except draining the land.

Mr. BRADBURN's account states, that " common fields and waste lands, from the diversity of situation, heavy rains flowing from the ploughed to the low damp parts that are not tilled, gross vapours that exhale from damp lands, are amongst the causes of the rot. Old sward, where the surface water remains long on the land, is most fatal to sheep."

He has been successful upon lands subject to rot sheep, by a plentiful use of lime, and in laying the land in a form for the rain water to pass off quick.

Mr. MILLER's opinion is, that " the lands most liable to rot sheep are wet and low lands, and loose, where sheep pull up the grass by the roots, and are obliged to eat the dirt with it. But sheep rotted in the winter of 1793 upon most sorts of lands, owing to constant wet, which produced more worm-castings than usual, and occasioned the grass to be always dirty by over-trampling it."

“ The only remedy is underdraining, to make the land
“ found and dry.”

Mr. BACHE, who has had much experience on the subject, thinks the rot in sheep is owing to “ wet seasons, and
“ to a putrid or unkindly state of the air and herbage on wet
“ lands in such seasons. He mentions a soft spongy grass
“ which he conceives has a tendency to produce the rot, and
“ which grass I understand to be of the *carex* or seg-grass
“ tribe, and which indeed grows mostly on wet lands; and advises that in wet unkindly seasons sheep should be removed
“ to dry lands.”

The scab is a very troublesome disorder, and when got to any considerable height requires a good deal of pains and attention to cure. It may be effected by perseverance in applying decoctions of tobacco, turpentine, sulphur and verdigrease, or by mercurials.

The foot-rot is cured by caustics, as quick-lime or butter of antimony, applied to the part affected.

The striking or dying in the blood is a very serious complaint, and generally happens to sheep in a growing or fatting state, often in turnips in winter, or in clover in the spring season, and is I suppose of the apoplexy kind. I have heard of no remedy or preventative, and the only precaution used here that I know of, is to look them over often, and kill them instantly when found seized with the complaint. But it often happens that they are dead, and the blood stagnant, before they are found; in which case the carcass is lost. If any sheep-master is acquainted with a preventative, the communication thereof would be a valuable service to the community. Bleeding has been recommended, but, not having been found effectual, is, I believe, but little practised.

HORSES. The draught breed of horses being those only whose use is applicable to agriculture, of the others I shall

say nothing, and of these but little, as conceiving there is nothing very remarkable in our breed; though we have a sufficiency of good stout horses for the use both of the carrier and the farmer. The colour is most generally black or brown, each being equally esteemed, and equally useful; and indeed, as the old proverb says, "a good horse is never of a bad colour." Some respectable stallions are kept of each colour: but in respect to the breed of horses, I think this county must yield the palm to the neighbouring ones of Leicester and Derby; and indeed breeding horses is by no means a main object here, and carried little farther than to supply the county, and also the neighbouring fairs with a few. There are some considerable shows or fairs, where a great number of excellent colts and horses are offered to sale, particularly at Stafford and Burton.

Hogs. The breed of hogs most esteemed here, are not the large slouch-eared breed, but a cross between them and a smaller dwarf breed. They should be fine in the bone, thick and plump in the carcass, with a fine thin hide, and of a moderate size; large enough to fat, at from one to two years old, to the weight of from three hundred to four hundred pounds each. These, if well bred, will keep themselves in good plight with little feeding, and will soon grow fat with a plentiful allowance of proper food. Hogs of the large breed have been fatted here to from six hundred to eight hundred pounds weight, exclusive of the entrails; but, requiring much time and food, have pretty generally given way to a smaller-sized, finer-boned, thick, plump animal. Hogs are generally fatted here by farmers with the refuse of the dairy, boiled potatoes and barley meal, and pease either whole or ground: by millers with what they call sharps and gurgeons, that is, with the husk or bran of wheat ground down, but not wholly divested of its flour; also with other

Sorts of grain and pulse ground down : by butchers, with the refuse or offal of slaughtered animals. Bacon and pork are much eaten in this neighbourhood, and the consumption is very considerable, but supplied in part from Shropshire and North Wales.

DUNGHILLS AND COMPOST. Most farmers turn over their farm-yard dung, and draw the detached parts of their straw, dung, rick-yard and barn-door rubbish, into a heap in the fields near where it may be wanted, that it may heat and ferment to a proper state for laying on the land. Very few also but pay attention to mixing together soil and town dung ; or lime, mud, ditch scourings, &c. as composts for dressing pasture land, or as an addition to the dunghill upon the arable. Town dung and lime are fetched by most people who are within reach of those manures. All the soot swept from chimnies is used ; “ and bone filings from the brushmakers is a very valuable manure.” In short, all the manure made in town and country is laid upon the land.

OPEN FIELDS AND INCLOSURES.

THE most considerable proportion of the cultivated land of this county is inclosed, very little remaining in common fields. I can only recollect the following common fields: 1. Stafford; 2. Stone; 3. Chedleton; and, 4. Bloxwich; the whole amounting to perhaps little more than one thousand acres. I reckon in all cases that common-field land is improved at least five shillings per acre per annum by inclosure, which will pay a

good interest upon the expence of inclosing ; also that its produce will be considerably greater ; for common fields are generally both imperfectly cultivated and exhausted by hard tillage. Inclosures only can effect the improvement of stock. Respecting population, I have no doubt but the means of employment are increased by inclosure, by the planting and reparation of fences. To prove the superiority of inclosures, let us put the case of a proposal made to throw a well-fenced inclosed country into common fields, and I believe every mind would revolt at the idea. The size of inclosures is various, and of all dimensions, from smaller to twenty or thirty acres, and should always be proportioned to the size of the farm. I believe the superiority of inclosures to common fields is univerfally admitted, and know not of any argument that can be brought to prove the contrary.

WASTE AND UNIMPROVED LANDS.

THE waste and unimproved lands of this county are very considerable, and certainly in the present state of population their cultivation and improvement is very much a national object. The most extensive wastes or uncultivated spots in the county are, Needwood Forest, Cannock Heath, and Sutton Coldfield ; besides a great number of commons of less extent, and some considerable tracts in the Moorlands and elsewhere, appropriated and inclosed, but not improved.

Needwood Forest is a most interesting spot. Here near ten thousand acres of one of the finest soils of the kingdom lay in a state of nature, wild and romantic ! beautiful in the eye of the fox-hunter and the sportsman. But, considering the state of population and consumption of landed produce,
its

its continuance in its present state is certainly indefensible upon any sound principles of general policy. Here the warblers of the wood chaunt forth their mellifluous notes, and the herds of deer range at will over the plain, or through the thicket. The fox and the badger burrow on the declivity of the deep glen, the rabbit on the sandy hill, and the hare bides itself in the thicket. The woodcock, the snipe, the pheasant and the partridge abound in profusion ; but all often disturbed by their tyrant master Man. The natural disposition of this extensive forest comprehends a great and beautiful variety of aspect. Gradual eminences and easy vales, and with meandering rills, and now and then a bolder and more abrupt swell, form the general feature of the Forest: a fit subject for any degree of improvement by human art and industry. In the northern part, particularly within Marchington Woodlands, the aspect is bolder. Here the Forest is composed of deep glens, surrounded by abrupt precipices ; impracticable to the plough, but happily well clothed with wood, amongst which the stout native oak, young, luxuriant, and of vigorous growth, is in great abundance. On a level with the summit of these precipices is a broad upland surface, capable of being converted to corn or pasture land of a first-rate quality.

The swells or hills of this Forest are very generally composed of immense beds of red or white marl, the colour sometimes changing suddenly, so that in a small distance they are as distinct as can be conceived. This marl, of a friable mouldering texture, continues from the very surface to many yards in depth. In some of the inclosed land adjoining, particularly Agardley Park farm, it is the same, and both colours have been used promiscuously for marling land, with equal good effect ; and very probably the white may contain the greater portion of calcareous earth. The white loamy surface is also equally productive of corn or pasture with the

red, and equally esteemed by the farmer. This white marl I had never observed before.

This Forest is stocked with deer, horned cattle, and horses ; but no sheep are suffered to feed on it. The supposed stock may be about three thousand deer, and three thousand of all the other kinds in summer, but much fewer in winter. The keeping of the three thousand horses and horned cattle, charged at twelve shillings per head for the summering, amounts to eighteen hundred pounds, or about four shillings per acre, upon the whole extent of the Forest ; and this sum of four shillings per acre is all the advantage that a neighbouring very intelligent farmer supposes the Public derive from this tract ; the deer not being managed in any system for the public advantage, or for the supply of subsistence and employment for the bulk of mankind. I shall add for them to the above account one shilling per acre, and five shillings per acre as the total value of the Forest to the Public in its present state. I estimate the capital employed in stocking the forest at five shillings per head upon three thousand in number, or fifteen thousand pounds. Although these, not being constantly kept there, cannot wholly be called Forest stock, yet I will suppose that which ought to be taken off on this account to be made good by advantages arising from the deer. The amount of capital employed in stocking the Forest will then amount to fifteen thousand pounds, or about one pound twelve shillings and sixpence per acre, and its value to the Public in its present state as land about two thousand three hundred pounds per annum.

The extent of the Forest, by an ancient survey alluded to by the Commissioners of Crown Lands in their last examination of it, is nine thousand two hundred and twenty acres : of this, in case of inclosure, I will suppose one thousand acres ought to be reserved for woodland. This may be done about
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the glens and impracticable spots, and in other places where thriving oaks are the most promising: there they ought to be fenced off, and reserved in clumps and coppices, which would be both an ornament to the country, and a nursery for stout oak timber. Two hundred and twenty acres I will suppose occupied by the lodges, and other small inclosures. This is already in an improved state; eight thousand acres will then remain for improvement. The moment that these shall have been inclosed, and buildings for occupation erected on them, they will be worth for a term, as many guineas per annum, and would be improved to a higher value. The amount of capital employed in such improvement in buildings, inclosure, crops, stock, &c. might on this rich land be twenty pounds per acre. Deduct the present capital, one pound twelve shillings and sixpence per acre, remains increase eighteen pounds seven shillings and sixpence per acre; which, upon eight thousand acres, adds one hundred and forty-seven thousand pounds to the national capital. By improving this tract, the increased annual product would probably be five pounds per acre, or forty thousand pounds per annum.

The nature of the soil of this tract is in general a red or white marly loam, more or less tenacious; but seldom approaching to the hardness of clay. Many considerable spots are light enough for turnips. I estimate one thousand acres in the eight thousand to be of this quality: this, in case of a division or inclosure, should be thrown into allotments, and divided in equal proportion, of so much to every hundred acres, and laid with the strong land, which would enable every occupier to provide himself with a portion of turnips, for winter food for his sheep; in comparison of which convenience, a trifling inconvenience in point of distance would be no object. The land would afterwards be sown with barley.

In every inclosure the rills and vales should also be particularly attended to, and the boundary of such vales traced out by a spirit-level, stretching in breadth as they proceed downwards; and the ditches separating them from the upland being upon a level, should be constructed to answer the purpose of floating gutters for irrigation; and where large quantities of flood water usually pass off, reservoirs should be constructed to collect and retain such water for irrigation at pleasure, by which means large tracts of the sloping sides of vales may be converted into water meadows: the quantity of such upon this forest is not very considerable, the vales being generally narrow, and the slopes abrupt; it is, however, sufficient to be an object deserving particular attention.

This Forest, in an improved state, might be rendered one of the most delightful spots in the kingdom, its form and aspect comprehending such a great and beautiful variety; and the staple of its soil being equal to the production of the fullest crops of the most valuable grain, or to the fattening of stock of a first-rate quality. The sportsman could have little reason to complain if his liberal allowance of a thousand acres, as here proposed, should be suffered to remain in woodland, and this in the wildest and most romantic part, where the natural aspect tends to the protection of the favourite objects of his amusement.

The principal natural vegetable productions that I had an opportunity of noticing, as in some degree rather peculiar to the Forest, are the following:

1. The stout native oak (*quercus robur*); in considerable quantity, and promising and good in quality. An oak called Swilker Lawn Oak, on this Forest, contains at least a thousand feet of timber: it is of great antiquity, but still fruitful in acorns.

2. Holly (*ilex aquifolium*); in great abundance, has been nursed up and encouraged in growth, I suppose, as winter provender for the deer.

A very small proportion of the other species of wood, though the Forest is not without some of the common under-woods.

Grasses.—3. Vernal grass (*anthoxanthum odoratum*); very common all over the Forest.

4. Annual meadow-grass (*poa annua*); chiefly near road-sides: none of the other finer grasses being yet in the ear (it being only May 21), they could not with certainty be discriminated.

5. Seg-grasses (*carex's*); several sorts in moist spots, and indeed all over the Forest, would be weakened and give way to better herbage, when any attention shall have been paid to discharge the stagnant water.

6. Louse-wort, or red rattle (*pedicularis sylvatica*); a bad pasture plant, but encouraged or weakened by the same causes with the last: I observed some with white flowers.

7. Gorse (*ulex Europæus*); in patches all over the Forest.

8. Petty whin, or hen gorse (*genista Anglica*); in various places.

9. Common fern (*pteris aquilina*); on dry banks.

10. Branched polypody (*polypodium dryopteris*); common on the Forest.

11. Wood spurge (*euphorbium amygdaloides*); very common on most parts of the forest, has a singular appearance: I have seen this plant no where else wild in Staffordshire.

12. Hound's tongue (*cynoglossum officinale*); very common; has rather a beautiful flower; worthy a place in shrubberies or flower borders.

13. Spurge

- 13. Spurge laurel (*daphne laureola*) ; common, and some specimens of it variegated.
- 14. Spurge olive (*daphne mezereum*) ; less common than the last.
- 15. Bilberry (*vaccinium myrtillus*) ; in moist places.
- 16. Ramsons (*allium ursinum*) ; near Marchington Woodlands.
- 17. Woodroffe (*asperula odorata*) ; growing intermixed with the last.
- 18. Black briony, or lady's seal (*tamus communis*).

The above are the most common, singular, or peculiar in some measure to the Forest, besides many others in common with other places.

Cannock Heath is the most extensive waste in the county, but its extent cannot easily be determined with accuracy ; I estimate it at about forty square miles, or upwards of twenty-five thousand acres. Large tracts of land on the north and west parts of this waste consist of a good light soil, adapted to the turnip and barley culture : the east and south parts are a colder gravelly soil, in many places covered with heath to a large extent ; yet I have no doubt but the whole may be brought into cultivation ; and that some of our inclosed land now under cultivation is not at all of a superior quality to this waste.

Sutton Coldfield is also a very extensive waste, of no other use but as a sheep-walk or rabbit-warren : that part of it in Staffordshire contains, according to an estimate by a very intelligent resident near the spot, about six thousand five hundred acres ; and he supposes the additional waste land between Lichfield and Birmingham, including Bromwich-Heath, Aldridge-Common, Walsall-Wood, Whittington-Heath, and Weeford-Hills, will raise the amount of Sutton Coldfield

Coldfield to ten thousand acres: their value in their present state amounts, by his information, to three shillings and sixpence per acre; and if inclosed would rise to ten shillings and sixpence per acre for the first twenty-one years, and afterwards be greater. The other principal wastes in the county are those of Swindon, Wombourn, and near Stewponney, in the south; Morredge, Wetley-Moor, Stanton-Moor, Hollington-Heath, Caverswall-Common, in the north. In other parts of the county we find Calf-Heath, Effington-Wood, Sneed-Common, Wyrley and Pelfall Commons; Tirley, Ashley, and Maer Heaths; Swinnerton, Tittenfor, and Shelton Heaths; Houlton, Milwich, Hardwick, and Fradswell Commons, and many others; and upon a retrospect of the whole, I cannot put our practicable waste lands, or such as are capable of being brought into cultivation, at less than one hundred thousand acres. Their present value as sheep-walks amounts to three shillings per acre per annum: their value inclosed, and after one round of cultivation (tithe-free) will amount to fifteen shillings per acre, and improve by inclosure and cultivation, twelve shillings per acre, or sixty thousand pounds per annum. The present capital or value of stock belonging to such land may be estimated at ten shillings per acre, or fifty thousand pounds; the capital of the land, when inclosed and cultivated, including buildings, fences, crops, live stock, implements, and furniture, would amount to fifteen pounds per acre, or one million five hundred thousand pounds. The addition to the national capital, by such general inclosure and improvement in this county, would amount to one million four hundred and fifty thousand pounds. This land also would make many farms, which, with a due proportion of labourers' tenements, would employ a population of twenty thousand persons, children and families included, in cultivation and other occupa-

tions connected and dependent thereupon; would furnish food for double that number, and would maintain also at least double the present number of sheep; if sheep stock should become the chief object, independent of other stock, which at present draw no nourishment or subsistence from this tract. Those farms also would produce a proportion of corn: the wool also of the sheep might be increased in weight and improved in quality by a due attention to rams and breeding stock. A general inclosure and improvement by cultivation of all the wastes of the kingdom would, by greatly increasing the national capital, have a proportionable effect upon the revenue; and it is astonishing that the colonization of distant countries should have been so much encouraged, while the cultivation of our own country remains so far from being finished or perfected.

In all inclosures the impracticable spots, those too uneven for the plough, should be reserved for other uses, for plantations where the soil is at all adapted for that purpose, or for rabbit warren upon sandy bottoms: I have often observed plantations succeed extremely well on the sides of precipices.

Paring and burning has been but little practised in this county, and opinions vary much as to its propriety. I have often observed it practised in other counties, but other means are used here even for reclaiming waste lands. Many people have an idea that it is injurious to thin soils; and perhaps deep soils can best bear the operation. Burning of couch grass is practised by some; but most people think even *that* is better destroyed by tillage and sunshine upon the land, if the season will admit it.

ARABLE LAND, CROPPING, AND CULTIVATION.

THE arable soils of this county, considered as referring to cultivation, may be divided into, first, the stiff or strong clay, marl, or loam; secondly, the loose or light gravel or sand; thirdly, the mixed or compound soil or loam, composed of various textures and matter in different places, inclining to sand, gravel, or clay; in which may also be included the thin black soils and the calcareous soils, or those on a lime-stone bottom.

The grain, pulse, roots, and other vegetables cultivated in field culture upon the arable lands of this county, are chiefly the following:

1. Wheat. 2. Rye. 3. Barley. 4. Oats. 5. Beans. 6. Pease. 7. Vetches. 8. Buckwheat. 9. Hemp. 10. Flax. 11. Turneps. 12. Potatoes. 13. Cabbages. 14. Rape. To these may be added clovers, trefoils, and one or two of the grasses. Turnep cabbage has been tried, as well as sainfoin, lucern, and burnet. Carrots and other garden plants are not introduced into field cultivation, except by gardeners for the markets.

Respecting a system of cropping and round of crops, no general one can be laid down that will apply in all cases; various accidents and circumstances will render deviations necessary and proper, and the industry and skill of the attentive farmer will rise superior to systematic rules; yet as every regular business to be well managed, must be conducted by something like system, the following courses of crops are given as the general practice of this county.

The stiff or strong soils are of two sorts; the strong and harsh inclining to clay, and the more mild or friable marl

or loam. These soils are generally on a marl bottom, often afterwards rock. On the strong harsh land seldom any other grain than wheat and oats are grown, and in the rotation of; first, fallow; secondly, wheat; thirdly, oats; when the land is laid down with clovers, trefoil, and ray-grass, for one two or more years. Sometimes on breaking up an older turf, the course is, first, oats; secondly, fallow; thirdly, wheat; fourthly, oats; with seeds as before. On the more mild and friable loamy soils, the course of cropping is, first, fallow; secondly, wheat; thirdly, beans or pease; fourthly, barley or oats; when the land is laid to grass as before. In laying land down to grass for more than one year, the white clover and trefoil are often sown. On this sort of soil "beans are sown in the beginning, and oats at the latter end of March: Barley seldom sooner than May;" although I think barley should always be finished sowing in April. Wheat is principally sown in October, but some little both sooner and later. A vein of incomparable marl is found near Stafford castle, and in the neighbourhood of Eccleshall, which in some places rises to the surface of the earth, and the farmers plough into it. The Rev. Mr. DICKINSON informs me, that the farmers fallow here for wheat, and get good crops without manure. They reserve the dung for the wheat stubble, and put it on in autumn for the benefit of the Lent tillage. This method secured afterwards a crop of beans and another of barley, which, when the dung was laid on the wheat fallow, were often unproductive. This appears a capital improvement, and of extensive application. Marl has been formerly, and is still much used on these soils. As it abounds in the under-stratum it should be laid on sparingly; otherwise it gives a harshness to soils perhaps too strong before. Lime is an excellent corrector of such harshness: it has the power of ameliorating such soil, and in some mea-

sure of breaking and dissolving its particles. It is much used, and with good effect, especially after marling.

I have been informed that the following tillage for barley on these soils has been attended with success, though not practised to any great extent. After summer fallowing for wheat, and harvesting the wheat crop, those who practise it plough up in the November following the wheat stubbles in a proper form for sowing, lay them dry by proper furrows or gutters, and sow barley the April following without farther ploughing, as the amelioration of winter frosts disposes the land to work kindly under the harrows without more tillage. To give this a fair chance of succeeding, the summer fallowing should be managed in a complete style. This strong soil will form good pastures, as can be proved by here and there a piece of old turf, which is an excellent pasture; but the occupiers say it requires many years to turf. My neighbour Mr. MILLER, complains of this land being too much ploughed, observing that "it is worked with the plough till it is tempered enough to make bricks, and then the occupiers complain it will not graze." Perhaps a larger proportion of turf, by enabling the occupier to maintain more stock, and consequently produce more manure, might be a means of producing an equal or superior quantity of grain from a less breadth of acres. Mr. MILLER thinks the quantity of turf land on these strong soils should be increased, by laying a few more pieces to grass, in proportion to the size of the farm, one piece in a year, clean and in good heart, with perennial red and white clover, trefoil, burnet, and grasses, and afterwards mucking on the turf.

Secondly, The light sandy or gravelly soils adapted to turneps. On this sort of land the Norfolk system of, first, turneps; secondly, barley; thirdly, clover; fourthly, wheat; has been long well-known and practised. The principal time

time of sowing turnips is from New to Old Midsummer, but some are sown both earlier and later: the land in preparation for turnips has generally four ploughings, and sufficient harrowings between. The first ploughing should be before Christmas, the second in March and well harrowed down, the third in May, and the fourth at sowing. The manure used here for turnips is dung or lime, or both, or a compost of dung and soil. Near large towns, the dung of such towns is often used; and near Birmingham in particular, I am well informed, the parings and shavings of bone and hoof dust is applied with great success. Turnips are in general hoed, and sometimes a second time, and weeded by hand; but it has not always been easy to procure hands for the whole of this business at a reasonable price. It may perhaps be worthy of remark, that the turnips of the last year, 1793, in this country, were produced of the largest size ever known; commonly of the weight of from twenty-five to thirty pounds each; occasioned undoubtedly by an uncommonly luxuriant Michaelmas Spring, and a mild open Autumn and Winter. The turnips are parted with hurdles, and generally eat on the ground by sheep and calves, and it is common to draw a quantity of the largest for stall feeding. Some farmers having observed that this system of the same crop every four years is hard tillage, and tires the ground, have given their fields two years rest under the seeds; which makes the course, first, turnips; secondly, barley; thirdly, clover; fourthly, pasture; and, fifthly, wheat. The wheat often succeeds well upon a two-year lay, though I think not so kindly as immediately upon the clover. Some farmers, however, think they can observe no deficiency of crop on that account: some have totally omitted the growth of wheat on light land. Their course is, first, turnips; secondly, barley and seeds, pastured for two or more years; and then sometimes oats, on breaking up the turf: or, first, turnips,

turnips ; secondly, pease ; thirdly, barley and seeds, as before. As in these courses the great staple, wheat, is neglected, I cannot bestow on them any commendation, but should prefer, first, turnips ; secondly, barley with seeds ; thirdly and fourthly, pasture two or more years ; fifthly, pease ; sixthly, wheat. This is sometimes practised, but is most applicable to land not too light or sandy, but possessing some staple of loam. The following course also is not uncommon, nor a bad one, upon land that is continued some years in pasture : first, oats ; secondly, wheat ; thirdly, turnips ; fourthly, barley with seeds, pastured for some years. It must be remarked, that whenever light land is seeded down with an intention of remaining some years in pasture, four pounds of white clover and four pounds of trefoil per acre, besides grass seeds, should be sown with the red clover.

Thirdly, mixed soils, compounded of, or inclining to sand, gravel, or clay ; the bottom various, sand, gravel, clay, marl, or rock ; including the thin black soils, and the calcareous soils, or those on lime-stone.

The mixed soils on a gravel or clay bottom are very subject to be springy. The water being pent in by beds of clay, is very apt to break out upon the surface through the gravelly strata, and in wet seasons to starve and destroy whatever crop may be upon the ground ; and this defect is extremely common upon most soils composed of a mixture of sand or gravel ; or clay, and the intercepting of such springs, and conveying away their water by hollow drains, is a very extensive and important part of agricultural improvement, equal in these respects to the draining of fenny land, at least in this county : and to the credit of the present occupiers be it recorded, that great exertions have been of late years made, and are still making in this species of improvement.

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Fallowing for wheat is practised on cold wet or strong lands by the best farmers, and is doubtless absolutely necessary on all lands improper for turnips, (which all lands are, that are not sufficiently dry to eat them on the ground by stock, for in such lands the poaching and treading in carrying of the turnips will do much more injury to the land than the turnips are worth); and he who shall attempt to manage such land without fallowing, will have occasion to repent his mistake. The Writer of this acknowledges himself to have been once a sufferer by too implicit a confidence in the opposite theory. Fallowing is necessary, because the roots of the perennial grasses, such as couch grass, vulgarly here called squitch, cannot be sufficiently weakened or extirpated without repeated summer ploughings; and without such extirpation it is in vain to sow wheat or other grain, because such grain will be much injured, and in some seasons, particularly in a wet one, be choaked by the increase of such grasses. The grass roots, called here squitch, are not of any one individual particular grass, but of several of the perennial grasses. What is called the black squitch, so troublesome in dry arable land, is an *agrostis* or bent grass, usually referred to the *agrostis capillaris*: but Mr. Curtis assured me in London, this spring, that this grass is not the *capillaris*, and that in his next arrangement of the grasses he shall call this squitch grass the *agrostis repens*. The creeping red-stalked bent grass (*agrostis stolonifera*) is the worst squitch grass on strong wet lands. The dog's grass (*tritium repens*) is the squitch grass of gardens. The tall oat grass or bulbous-rooted squitch grass is very troublesome, and if suffered alive in the ground in wet seasons, will increase prodigiously, and choak any crop. The creeping soft grass (*holcus mollis*), and several others of the perennial grasses, will interfere with the growth of corn; and as they have all the habit, in some degree, of establishing themselves in the ground when it lays in turf, summer fallow-

ing becomes necessary for their extirpation previous to sowing wheat, as this extirpation can be only very partially effected by hocking, or in any other way than by repeated deep summer ploughings, and as the mixed soils now in question, which are too moist for turnips, have a particular propensity to the production of these grasses, summer fallowing becomes absolutely necessary; and every attempt to crop without it, for any length of time, on such land, has terminated to the injury of the land and the loss of the occupier.

The usual culture and course of crops on the mixed soils of this neighbourhood are, first, fallow with four ploughings and manured with dung or lime, or both, or marl and dung, and sown with wheat. Secondly, The wheat stubble pin-fallowed, that is, ploughed in autumn and laid dry, cross plowed in March and harrowed down, and ploughed up and sown with barley in April, with clover and other seeds, and then laid two or more years in grass; after which it is again ploughed up, and oats are sometimes sown on the turf, which afterwards is fallowed again. The following mode seems a rational way of avoiding a total fallow, and is sometimes practised, viz. First, Oats on one ploughing of the turf. Secondly, The oat stubble dunged, ploughed at Michaelmas and sown with winter vetches, to be eaten off the ground time enough for a fallow for wheat. Thirdly, Wheat. Fourthly, Barley with seeds, and then grass for two or more years. Some of the courses of cropping before named for strong and light soils, are also sometimes applied to mixed soils.

Vetches are often sown in this county both in autumn, and spring; the former certainly by much the most commendable. I have this season met an instance where a pretty good crop has been carted to the stable, and the whole piece cleared early enough for sowing turnips in June. This will seldom

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happen here, and is attributed in this instance to the mild winter and early spring. Vetches would I think be more sown, but the seed is generally dear, and the keep often not worth the feed, without running them on the ground so long as to interfere with the working of the fallow.

Rye is sometimes sown on a wheat stubble for early spring feed for sheep, and eaten off early enough to work the ground for turnips. This on sound early land may give feed enough to pay for the seed, as coming in at a time when keep is very valuable. Rye is little grown for a crop in this county, except on headlands or hedge sides. Rye used some years back to be much sown, mixed with wheat, on light land, but has been generally omitted since the introduction of the system of wheat on clover lays.

Buckwheat (called here French wheat) has been grown both for ploughing under as a manure, and for a crop, but is in no very high repute, and no respectable experienced farmers would think of growing it unless upon new-inclosed or unimproved land. In the system of ploughing it in as a preparation for wheat, it has generally been supposed to leave the land too light and porous; and for a crop, although the seed is a good food for hogs, pigeons, or poultry, it is not in general esteemed equal to a crop of the usual grain or pulse. One of our native plants, nearly allied to this, stands recommended by Dr. WITHERING for cultivation; at which I suppose the practical farmer will laugh, though perhaps without a cause. this is the black bindweed, called here bearbind (*polygonum convolvulus*) which the Doctor prefers to buckwheat (*polygonum fagopyrum*). His words are these, after describing the bindweed: "The seeds are quite as good for use as those of the preceding species, (referring to buck wheat) are produced in greater quantity, and the plant bears cold better." The seed certainly contains a very fine white flour, and the plant is extremely prolific, but the grain is smaller than that of buckwheat.

wheat. The farmers here consider it as a troublesome weed, twining round the stem of beans, wheat, or other grain, and fretting the plant: and the seeds, being of a triangular form, will not readily separate, in dressing, from the grain with which it grows; it may probably be equally worthy of cultivation with the buck-wheat, as a food for hogs and poultry.

Hemp and flax are grown in this county, but upon a small scale. Hemp is generally grown in small yards, appropriated to that purpose, near houses, or in the gardens of cottages, though sometimes an acre or two is grown by a farmer after turnips; and I have known a few instances of large crops upon a deep black peat, well drained. Flax is generally grown upon a turf on one ploughing. Most leases have restrictions to prevent the cultivation of these plants on a large scale, and the tenants are often limited to an acre; although other farmers with open leases make no use of the privilege, supposing these plants will pay no better than the usual grain, which I believe they will not, when grain bears a pretty good price.

Potatoes have been a good deal cultivated in various ways, and applied to the fattening of cattle and hogs: but the better sorts will not pay for those purposes, unless in very plentiful years, when they are cheap at market. The refuse potatoes are very generally applied to fattening hogs, which they will bring on fast when boiled and mixed with a little ground barley, and the inferior barley called tail-end; and even damaged barley will do for this purpose. The markets are principally supplied with potatoes by cottagers who have large gardens, or who rent land for the purpose of growing them: some also are grown by the smaller farmers. At Smethwick, near Birmingham, I observed upon a mixed soil some fields of potatoes in rows of a width to be plough-hoed;

they were managed in a good style, the land well worked and clean. They have been grown here in various ways; cultivated both with the plough and spade; and the culture well understood, as well as their application to fattening cattle; the quantity applied to which is regulated by the price of the market.

The cultivation of Cabbages in the field has been introduced into this county for some years, and practised in most parts of it upon a small scale; many of my neighbours growing them regularly, as I have several times myself. This spring I observed, May 20, two fields of cabbages already planted between Croxall and Burton upon Trent. Also May 27, Mr. HARVEY of Dunstall, who has been long a planter of cabbages, had some breadth-planted with autumnal plants, and intended finishing the field with spring plants. This is the true system, as the former will be large enough for early use; and the latter will stand the winter for use in spring. He plants the Drumhead, and procures the seed from Scotland: I observed also cabbages planted near Okeover, and the ground well prepared: their culture and use are understood in most parts of the county. They are principally given either to sheep, in which case they are carted to a turf; or to milking cows, whose milk they much increase without tainting the butter. Sometimes also they are given to feeding cattle, as they can be come at in frost and snow, when turnips are buried, or locked in the ground. My neighbours, Mr. CORSER, Bushbury, and Mr. MILLER, Dunstall, have this season, 1794, each of them a good portion of a turnip-field prepared for cabbages; Mr. MILLER's being now, June 25, in part planted, the others waiting for rain. They chuse to plant them on three feet ridges, manured under the rows with soil left between the rows for one plough-hoeing: the hoeing is afterwards finished by hand: some people plant them with-
out

out ridging, spread the manure promiscuously, and do all the hoeing by hand. Their use for milking-cows is rendered of less consequence, by a discovery in consequence of which turnips may be given to such cows without tainting the milk, or its produce. A small quantity of clear water, in which nitre has been dissolved, added to the milk fresh from the cow, will take away every ill-flavour from the butter, though such cow may have been fed ever so plentifully with turnips. I am since informed by my neighbour Mr. MILLER of Dunstall, that they have been equally successful in curing the taint from turnips, by putting a lump of nitre in the vessel that holds the cream; and the cultivation of turnips being more simple, attended with less labour, and probably more kindly for the ground, they will on these accounts have the preference. Some farmers think cabbages are best grown on the same spot or flat of ground every year, which should be allotted and inclosed for that purpose: others grow them in the turnip-field; and they are followed by barley, as it is generally convenient to reserve them for use late in the spring: and as they are often grown on the strongest soil of the field, the land drying and becoming cloddy, gives more trouble in making it fine for the barley crop, and may occasion the idea of their leaving the land less kindly than turnips, although this may be owing to other circumstances.

Turnip-cabbage has been cultivated by several persons; but the uncouth form of the roots, and the difficulty of clearing them from the ground, has occasioned them to be neglected; although they are extremely hardy, and might be of some use in the interval of time between turnips and grass.

Rape (*brassica napus*). This plant I have never known cultivated in this county for its seed, and many leaves contain restrictions to prevent it; but it is sometimes sown on an early stubble for spring feed for sheep, upon land intended to be sown.

sown with turnips the ensuing summer: the smooth charlock is this plant in its wild state.

To the courses of cropping before stated, I shall just add that of the Moorlands, which is the worst part of their management, destructive to the land, and certainly ignorant in the extreme. This course is generally, first, oats upon one ploughing of the turf; secondly, oats upon one ploughing of the stubble; and thirdly, oats after a winter fallow, with clover and grass seeds; but the clover and seeds sometimes omitted, and nature trusted to alone to form the turf. They have an idea that the land will not produce wheat, or not ripen it in time, and but seldom attempt it; but when they do, it is after fallow. They say it will grow a year from the sowing. I have no doubt but its time of ripening would be much facilitated by introducing quickset fences to shelter the country in winter, which is in general very high ground, very much exposed to winter blasts, and sheltered only by low stone walls. With quickset fencing and early sowing, I have no doubt but any quantity of wheat required might be produced; but the country not being populous, and oat-bread in general use, the demand for wheat is not very great: its cultivation, however, as I understand, is increasing.

BROAD-CAST, SEED, AND PRODUCE.

THE major part or bulk of the sowing business is done in the old broad-cast way, though drilling is introduced, and has made some progress. The general allowance of seed to an acre in this way, is, of wheat, two bushels or a little more: of barley, three bushels; of oats, four to five bushels; of pease, three bushels; and of beans, I believe, four bushels;

the bushel of this county being nine gallons and a half. The returns or product vary, but to be deemed a good fair crop, should be, of wheat, twenty-five bushels per acre; of barley, thirty; of oats, thirty to forty; of pease and beans, various. Much greater quantities than the above have been obtained in particular cases, and a bad crop full as often gives less. The largest well-authenticated produce of barley that I know of was raised a few years since upon Oxley farm, near Wolverhampton, where from twenty statute acres of land, sown broad-cast, Mr. HUSKISSON carried to market, twenty loads of thrashed barley, each load sixty bushels, and each bushel nine gallons and a half, besides the tail-end kept for his own use which could not be less than three such bushels from every load; making sixty-three bushels per acre of nine gallons and a half to the bushel; or near seventy-five Winchester bushels per acre. This statement can be proved as a fact by the most unquestionable evidence. Wheat has sometimes produced forty, and oats sixty such bushels per acre.

DRILL HUSBANDRY. The drill husbandry, as stated before, is fairly introduced, and has made some progress. I believe I could name a dozen farmers who have drill machines, one half of which are within a few miles of Pendeford. The machines used here do their work pretty well. There are two varieties of them; one invented by COOK, or an imitation of his invention; the other made under a patent granted to a person in Yorkshire, and sold here by Mr. JOSEPH CORNFORTH, machine-maker, at five guineas each. The delivery of grain in this is effected by hollows, or cavities, cut in a cylinder; that of COOK's, by ladles fixed in a cylinder. They either of them deliver several rows at a time, and may be constructed to deliver the rows at any given distance, they have been used for all sorts of grain, but not generally; sometimes

sometimes rainy weather obliging the owner to do part of his business broad-cast. The following account of drilling I have from gentlemen who have been in the habit of practising that method of sowing.

The Rev. Mr. DICKENSON, Rector of Blymhill, says, " I have just introduced what seems to me a considerable improvement of Mr. COCK's drilling machine : it sets the drills at the distance of seven inches ; an interval which in the culture of wheat and barley is far preferable to nine. Mr. SHENSTONE of Standysford has, I believe, the merit of having planned the alteration, and gets the machines fitted up : the price of one is about ten guineas, including an allowance to Mr. COOK as Patentee. It will drill wheat upon the clover lay, and I do not entertain a doubt of its superiority to broad-cast sowing, in light soils." I shall just add, that I have had the pleasure of seeing two pieces of Mr. DICKENSON's drilled barley, but do not think it superior to what might have been expected from broad-cast sowing.

I have received the following account from Mr. HIGGS, Cronkhill, near Wolverhampton.

" I have been in the practice of drilling grain by a machine for the last five years. I began with two acres of barley upon a wheat stubble of the preceding year, in 1790. A wet spring succeeding filled my ground with weeds ; but by hoeing in June following, I had rather a better crop than broad-cast, in the same field ; which gave me hopes that if ever I should understand properly the drill mode, it might answer my end. About the Michaelmas following, I sowed six acres of wheat with the drill, and in the spring of 1791, two acres of pease and two acres of oats on a clover lay ; as also five acres of barley after wheat stubble : the wheat was part on barley and

“ part on pease stubble. The wheat crop after barley was
 “ very indifferent, but that after pease, though in the same
 “ field, very great, being thirty-eight strikes per acre, at
 “ thirty-eight quarts to the strike, which is equal to upwards
 “ of forty-five strikes Winchester. The oats were very
 “ indifferent, but the pease produced a great crop; fifty
 “ strikes of our measure per acre. The barley also amount-
 “ ed to fifty strikes of my measure per acre. I have still
 “ pursued the drill mode in preference to broad-cast, where
 “ I can have an opportunity of hoeing; or where the ground
 “ has been made very fine by spring ploughing, even if I
 “ cannot hoe, as when I sow my spring grass seeds: but the
 “ greatest improvement I have made by drilling has been
 “ on an old lay turf, particularly in one instance of ten
 “ acres. I ploughed the ground in October 1792, and drill-
 “ ed it with wheat: it was ploughed with a flay-plough*,
 “ and no manure was used. In the April following it was
 “ hoed with a hand-hoe, for which I paid three shillings per acre,
 “ and beer. The field produced two hundred and ninety strikes,
 “ of thirty-eight quarts to the strike. I am now making a
 “ turnip fallow of the same field: it is a deep mixed soil,
 “ rather inclining to a light soil. The ground which I
 “ recommend for drilling, is a good deep soil, rather light,
 “ and free from very long roots; but the cleaner the soil
 “ shall be, as in all other husbandry, the better will it be
 “ for the crop. Before I sow my wheat, I steep it one night
 “ in a brine of salt and water, mixed up until it will bear an
 “ egg new laid, which, I think, preserves my wheat from
 “ the smut. If afterwards used for drilling, it should be
 “ spread on a floor to be dried before it is used, to prevent it

* See IMPLEMENTS of HUSBANDRY.

“ from sticking together, and should not be dried with lime,
 “ as in the common broad-cast way.

“ There are four farmers within one mile of me, that use
 “ the drill machine; and all their drilled crops now growing
 “ look better and much preferable to their broad-cast : but
 “ speaking for myself, I give the preference to drilling, which
 “ will be seen by the following account of my crops, now
 “ growing as under, and in which the drilled look far better
 “ than the broad-cast. In short, the drill has far exceeded
 “ the broad-cast each year I have used it, besides leaving my
 “ land, where I can hoe it, cleaner from weeds.

CROPS OF THE PRESENT YEAR 1794-

	Drilled Acres	Broad-cast. Acres
Wheat - - -	18	7
Barley - - -	17	1
Pease - - -	9	—
Oats - - -	—	3
	<hr/>	<hr/>
Total	44	11
		Total 55 Acres”

I shall just observe, that Mr. HIGGS's arable land is generally a good deep light loam; and that other farmers who have tried the drill machine, generally speak in favour of the practice.

Respecting the advantages of drilling, and its superiority to broad-cast sowing, the following advantages are obvious:
 1. The vacant spaces between the rows can be much easier cleaned by the hoe than between the plants in broad-cast sowing; 2. The seed is laid in at a more proper and equal depth than by the harrows; and, 3. A saving of seed may be

effected of, I believe, one-fourth of the whole. In some other respects, theoretically considered, the broad-cast sowing should seem to have the advantage. For, 1. The young plants promiscuously disposed will have a less distance to draw their nourishment, and will occupy the whole extent beneath the surface with less effort, and with shorter root fibres, than when crowded in rows with open spaces between. 2. The broad-cast sowing is rather more simple and easy in operation, and less liable to be obstructed by change of weather or showers. 3. In the case of sowing grass seeds with barley, which is or should be always practised, the advantage of hoeing is lost; and in the steeping of wheat for sowing, the drying with lime is lost; in which probably a great part of the health of the operation consists; and the drying by spreading the seed on a floor seems tedious, and a work of time. It is further to be observed, that for land to be fit for drilling, it should be clean from root-weeds, and in a fine state of culture. I have heard a very sensible experienced broad-cast farmer remark, that when his land is in that state, he can do anything with it, or get a good crop in any way. I have just further to remark, that I did some years back attempt the drill system, with a view of ascertaining how far foul land, or such as wanted fallowing, could be cleaned by hoeing between the rows, hoping there might be a possibility of precluding the necessity of summer fallowing; but not succeeding to my mind in this particular, I declined the practice. I would not wish by any means to be understood to have the least wish to discountenance the attempts of others, as I consider the practice of drilling and hoeing the fields in a good style as a very neat mode of culture; and he must always be esteemed an improver of the agriculture of his country who shall obviate the difficulties at-

tending the drill, and the objections to it, so as to render it of more general utility to the united kingdoms.

Mr. MILLER, Dunstall, is a friend to the drill husbandry, which he practises on a considerable scale. He has some barley this season which promises to be an excellent crop: it is but justice, however, to remark, that the broad-cast in the same field is equally good.

SEED-TIME AND HARVEST. The seed-time in this country commences in March, and should always be finished in April, but sometimes in some places hangs on through a great part of May. The hay harvest is from the middle of June to the end of July. Corn harvest is in August and September; but in some early seasons pease, oats, and barley, have been harvested about the end of July.

STEeping OF SEED. The steeping or pickling of seed wheat previous to sowing is pretty generally practised here, and its propriety established by the most weighty of all arguments, namely, by the most decisive experimental proofs of its good effect in preventing the smut. Various ways are used. That most generally approved is, to immerse the wheat in a brine of salt and water, or urine, mixed up strong enough to swim a new-laid egg; and then stirring it well up, to skim off whatever swims on the surface; and after taking it out, or letting off the brine, to dry it with quicklime to a state for sowing. In this process the hydrostatical improvement of the seed is evident, by separating from it every seed and grain deficient in specific gravity; and I have never known or heard a well-authenticated instance of its failure in completely preventing the smut; a disease in wheat which whoever is well acquainted with, must think serious indeed. The ingredients here used carry with them the idea of health, and are worth all the expence and labour as manure.

WEEDS.

WEEDS. The weeds to which arable land is subject, are a great plague to the plough farmer, and it is chiefly to their predominance that the necessity of summer fallowing is to be attributed. The following are the principal weeds that the plough land of this county is most subject to, in which those before enumerated as pasture weeds are omitted.

1. Couch grass, called here squitch, that plague and curse to arable cultivation. The term squitch signifies the roots of perennial grasses; of no one particular, but of several sorts; particularly the bent grasses (*agrostis's*), the dog's grass (*tritium repens*), creeping soft grass (*helcus mollis*), tall oat grass (*avena elatior*), and some others. The roots of these are sometimes so interwoven with the soil in hard tilled, worn-out land, as to form a perfect mat, and to choke the plough: they abound most in light and mixed soils, and are only to be destroyed by repeated summer ploughings, or by forking them out and burning them.

2. Coltsfoot (*tussilago farfara*); very apt to abound in hard tilled land. LORD HAWKE informed me at the Board of Agriculture, "that the only time to destroy this weed is by cutting it up in those months when it begins to throw its flower; at which time if so cut, it will bleed to death." These months are February or March. Neglected at this time, it will soon after ripen its seed, which, furnished by nature with feathers or wings, flies all over the country, and therefore establishes itself very quickly on banks of earth newly thrown up. This weed may be considerably weakened by repeated summer ploughings, and may then, for the greatest part, be weeded out, as the ground is thus rendered light.

3. Common or way thistle, cursed thistle, or sow wort (*geratula arvensis*), growing everywhere, may be weakened by good tillage and weeding, but not totally destroyed. This weed seems almost naturally produced by the soil, in conse-

consequence of the curse, "thorns also and thistles shall it bring forth unto thee;" yet doubtless, strictly speaking, produced only from its numerous fibrous roots, which are strictly perennial, and from its more numerous seeds, which are feathered, and can fly to any distance with the wind. This plant can only be eradicated by universal agreement to cut it up before it shall seed.

4. Charlock, or chadlock. The yellow-flowered weed termed chadlock by the farmer, is not one individual, but three separate and distinct plants, each species more or less abounding in different places. They are as follow: 1. The rough-leaved chadlock, or wild mustard (*sinapis nigra*); 2. The smooth-leaved or wild rape (*brassica rapus*); and 3. The rough-leaved wild radish, with whiter flowers (*raphanus raphanistrum*). These plants are all annuals, produced entirely from seeds, which they bear in great abundance, and which seeds will lie in a clod as safe as in a granary, and vegetate at the end of twenty years, when ploughed up and exposed to moisture. These intruders are only to be extirpated by ploughing them under when the field is fallow, or by weeding them out of the crop before their seed shall have been ripened; for if suffered to perfect and shed their seed, each single plant will produce an hundred; the farmer should therefore carefully prevent this by weeding or hoeing them out in time.

"One year's seeding makes seven years weeding," is an aphorism which should be strongly imprinted in the farmer's memory. The increase of the above and some other of our field weeds when they are permitted to shed their seed, is beyond all calculation.

5. Ivy-leaved speedwell (*veronica hederifolia*), sometimes very much abounding amongst wheat very early in the spring, but seeding and leaving the ground early, and perhaps not much

much injuring the crop, would probably be best destroyed by working and pulverizing the fallows very early in the season, which would occasion the seeds to vegetate, and the plant would be destroyed by ploughing it under without giving it time to perfect its seeds.

6. White darnel (*lolium temulentum*) is produced from seed sown from wheat, to prevent which great care should be taken. This weed is extremely prolific, and very injurious to a wheat crop when growing, and to its value at market: it is an annual plant, which may be avoided by attention in the choice of seed.

7. Goosegrafs, catchweed, or cleavers, called here Eriff (*galium aparine*). I have known this plant very troublesome in a wheat crop, twining and crawling up the straw or stem, but is not very common in well-managed land.

8. Bindweed (*convolvulus arvensis*); a troublesome parasitical weed, but not so abundant here as I have seen it in some of the chalk counties.

9. Shepherd's needle, here beggar's needle (*scandix pecten Veneris*); sometimes very abundant in hard tilled land, and its seed not easily separated from corn in dressing or winnowing.

10. Common chickweed (*alfine media*) abounds most in land rendered fine by repeated ploughings.

11. Pale arsmart or lakeweed (*polygonum pennsylvanicum*) abounds most in wet seasons, on moist land.

12. Black bindweed, or bearbind (*polygonum convolvulus*). This is also a parasitical plant, twining round any thing it can lay hold of. Dr. WITHERING recommends it for cultivation, preferring it to buckwheat, to which it is nearly allied.

13. Bladder campion (*cucubulus behen*); often growing amongst barley on light land.

14. Cockle

14. Cockle (*agrostemma githago*). Care should be taken not to sow this weed, it being very injurious.

15. Corn poppy (*papaver rhoeas*); sometimes very abundant on light land in dry seasons, and a pretty sure indication of a light crop.

16. Corn crowfoot (*ranunculus arvensis*). I have seen the plant so abundant, as to be very injurious to a wheat crop on strong moist land.

17. Dead nettle (*lamium purpureum*); abounding sometimes and on some lands in wet seasons.

18. Bugle (*ajuga reptans*); common in wet seasons.

19. Shepherd's purse (*thlaspi-bursa-pastoris*), well known sometimes as a troublesome weed.

20. Fumitory (*fumaria officinalis*); abounding sometimes on land in fine tillage, but not very pernicious.

21. Tare (*ervum tetraspermum*); a terrible enemy to wheat crop where it abounds. Care should be taken to purge land intended for wheat, of this plant, by fallowing and repeatedly harrowing it fine. All land is subject to it previous to sowing the wheat. The seeds are good food for pigeons and poultry.

22. Groundsel (*senecio vulgaris*); a garden weed, but uncommon in corn-fields in a good soil. It should be destroyed previous to shedding its seed, by weeding out or ploughing under: its seeds ripen rapidly, and fly over the country by the wind. It abounds in the hop grounds in Kent, and is considered there as a sign of land in good condition.

23. Corn marigold (*chrysanthemum segetum*); sometimes very troublesome and injurious to a crop.

24. Stinking chamomile or may-weed (*anthemis cotula*); a disagreeable and troublesome weed.

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25. Knapweed, or blue buttons (*centaurea's of sorts*); not easily prevented or destroyed on some lands.

26. Corn horsetail (*equisetum arvense*); a hardy perennial root weed, not easily destroyed.

27. Female fern (*pteris aquilina*) abounds most in very dry sandy land.

Summer fallowing well managed has a tendency to extirpate all sorts of weeds; for the pulverizing of the soil by frequent ploughings and harrowings, combined with the effects of dews, showers, and the solar warmth, disposes the seeds, roots, and prolific principles of all plants to vegetation; which vegetation being effected, and the young plant in a growing state, it is completely destroyed by the next ploughing: this several times repeated, purges the land of weeds, and its whole vegetative force is in consequence directed to the support of the particular vegetable whose seed is thrown in by the cultivator; or should a few weeds remain undestroyed, they are to be drawn out or cut up by weeding. Upon these considerations are founded two very obvious and just principles of practical agriculture, viz. 1. the necessity of summer fallowing foul land; 2. the propriety of being very careful in the choice of seed.

TITHES.

THE question of tithes having been pretty much and pretty often agitated and examined, I cannot expect to be able in this Report to throw any new light on the subject; I shall, however, state my ideas of the effect they have on agriculture; and if that effect shall appear prejudicial, some mode

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of preventing or remedying the evil may be proposed, without doing injury to any of the parties interested.

Tithes having been formerly appropriated for a particular purpose, must be admitted as a property equally sacred with any other, especially as that appropriation is admitted by those laws which regulate the country where the tithes are produced; and although a considerable part of the property so appropriated has since been alienated from its original purpose, yet such alienation having been admitted and confirmed by those laws which protect all other property, no friend to justice and the stability of property can expect an exoneration from, or an abolition of tithes, without proposing and providing an equivalent.

Having said this, I must at the same time confess, that tithes being a heavy tax upon the efforts and exertions of human industry, are in a considerable degree a prohibition of such exertion, and in that respect act as a dead weight and a check upon that spirit of improvement which it is good policy to encourage by every means that can be devised. If an equivalent can be found, and a commutation be effected without injury to any one concerned, such regulation would doubtless be an improvement in our political system.

The following plan is proposed as the outline of an exchange of tithes for land, as land will always bear a value proportioned to that of its produce, and even the price or value of labour is measured by the same standard.

Let an act of parliament appoint in every diocese an equal number of the most respectable clergy and country gentlemen Commissioners and Trustees, and with a power of nominating surveyors to value all the tithes belonging either to the clergy or the laity within the diocese; and let the act give an option to the land-owners of purchasing their respective

pective tithes at the valuation fixed on them by such surveyors; the money arising from such redemption might be invested in the funds, or other securities, until a proper opportunity should offer of laying it out in land; and where the land-owners should refuse to purchase such tithes, the Commissioners might have the power of mortgaging them, or of taking up money on their security, to be invested in the same way with that arising from tithes actually sold: or, after a given time, the Trustees might be empowered to set apart an allotment of the land of those owners who refuse to purchase, and which, if conveniently situated for the former tithe-owner, might be so applied, otherwise sold, and the money arising from such sale invested as before, until it could be laid out in the purchase of land. The execution of some such plan would be attended with infinitely less trouble and expence than that now incurred by the annual valuation of tithes, as, should the proposed regulation be once effected, the business would be settled for ever; but under the present system, the surveyor or valuer's business is continued from year to year, and if that system should continue, will be from generation to generation. An equivalent in land must certainly be a more solid property than tithes. Land may be improved in any degree by good management and industry; tithes fluctuate or sink in value at the will of the cultivator. I think some such commutation as this may be easily effected, and then all parties would be pleased with the alteration.

IMPLEMENTS OF HUSBANDRY.

THE implements of husbandry used here for draught, are waggons and carts ; for tillage, double and single ploughs, with and without wheels ; drill ploughs, harrows, and rollers for other purposes ; winnowing machines, straw engines, &c.

The waggons are either with six-inch wheels, or narrow wheels : a few of the former, kept by the larger farmers, in which six horses are drawn double, convey a load of from three to four tons. The narrow-wheel waggons are drawn by four or five horses, and carry from two to three tons. Six-inch wheel carts are mostly used about farm-houses for conveying dung, or for gravel or stones for repairing roads ; or for hollow draining. Some few narrow-wheel carts are chiefly kept by small farmers for the road : one-horse carts also are kept by gardeners, butchers, and people who supply the markets. The wheel carriages of this county are upon a pretty good construction, perhaps not capable of being much improved : they are, I think, if any thing may be condemned, rather too heavy, and should be constructed lighter, if it could be done consistent with the giving them a sufficient degree of strength. Double or two-furrow ploughs are much used, and answer well on light soils, where four horses will plough two acres or more per day. These ploughs are made on a good construction, and require no holder. The single-wheel plough is a very good tool, requiring no person to hold or touch it, except when it is turning at the end of the furrow ; they require but one attendant, for which a boy of fourteen or fifteen years of age is sufficient. And here I cannot but remark the superiority of a plough that requires no holder, but a person only to drive the horses, and turn it out and in at

the end of the furrow, to one which requires to be held, and the horses of which are guided by reins. These ploughs have lately been much improved by the addition of an iron earth-board firmly screwed to the coulter, called here a *flay*, for ploughing turf, which takes off the turf and turns it into the furrow, where the plough immediately covers it with earth : by this management a turf at one ploughing has the appearance of a fallow, and harrows nearly as well. This ploughing is attended with scarcely any extraordinary trouble, but requires the strength perhaps of an extra horse. It is much used here for turf. The common swing plough without wheels is used to plough hedge-sides, ill formed corners, or any difficult work : it requires both a holder and a driver. The drill ploughs used here are of COOK's invention, or an imitation of it ; or another made in the North, and sold here by Mr. JOSEPH CORNFORTH, machine-maker. The last is the cheapest. They both do their work well, and cover up the seed at the same time ; which covering is farther perfected by rolling. The harrows used here have nothing singular in them. The common roller is used, and sometimes the spiked roller, on strong land with good effect. Large heavy cast-iron rollers of from one to two ton weight are used, and are excellent for meadows, or for rough or cloddy arable land : they require however a good strength of horses to draw them. I have lately seen a common corn roller, constructed of two pieces instead of one, being cut through, as it were, and hung with gudgeons in the middle ; the advantage of which is, that in turning, it is less liable to root up the corn, and may be formed of two short pieces, instead of one longer. Machines for winnowing, or dressing corn from the chaff, have been long in use here : they are now brought to great perfection, and do their work completely, and with dispatch, requiring not more than about half the time necessary in the common

common way. They are made upon the very best construction by Mr. JOSEPH CORNFORTH, at Bushbury, near Wolverhampton; the price from six pounds to seven guineas each. Upon the whole, the machinery and implements of this county are tolerably good, and little seems wanting in this way; and I cannot help thinking, I hope without partiality, that our implements in general, but ploughs in particular, are equal to any, and superior to most which I have seen; and I have viewed those of many counties. Mr. MILLER on this subject makes the following remark: "The ploughs made in
 " any country where the plough-men have been most used to
 " them, are the best. For when I came to this place, I brought
 " with me ploughs and plough-men out of Leicestershire,
 " which were good ones so long as my Leicestershire-men
 " staid: but when they left me, they might as well have
 " taken the ploughs along with them; for Staffordshire-men
 " could not plough with them." This remark may serve to shew the difficulty of altering established customs, and that such alterations, even if improvements, must be gradual, and introduced by degrees; as the same workmen are not brought at once to use a new tool expertly: and unless they in some degree approve of any new practice, to make a fair experiment, the master must give his own attention, and do the business himself.

HORSES AND OXEN FOR DRAUGHT.

HORSES for the farmers use, are almost universally used by the farmers in this county, and seem almost totally to have superseded the use of oxen; and are still gaining ground, and
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oxen at the plough are but very little used. The reason seems to be, the great superiority of horses as to dispatch, and with which a less number of servants will do the same business, than can possibly be done with oxen; and a number of servants being one of the heaviest of the farmer's expences, horses are found upon the whole to do the business cheapest. This is by no means theory; for the experiment has been made by many farmers, who, if it had been found their interest, would certainly have given the preference to oxen. Amongst other large farmers, Mr. LOCKLEY of Boscobel, who, though in Shropshire, lives on the borders of this county, persevered in the comparison for some length of time: the following is his opinion.

“ The land of this neighbourhood, and of Staffordshire in general, is a marl, and not well adapted for ox teams: partially it may; and where the turnip or sandy land will admit their use, there cannot exist a doubt of their utility: they must work easy, or they cannot get on at all. And they appear to me best adapted to carting out manure. Six oxen are necessary upon the marl or wheat land in Staffordshire; nor will that sort of land always admit of a wheel-plough, attended only by one servant. Six oxen would work a two-furrow plough in the light turnip land: that alone is the soil to which they are adapted, and of which Staffordshire has but a small proportion.

“ Oxen are as three to two, to horses upon light land, and as two to one upon strong; but oxen will not be even in that proportion without an addition of keep and care in the winter.”

I knew an instance some years back of a capital farmer, upon light turnip land, who always recommended the use of oxen to others, but never used one himself, though the extent of his business

business was such as to find employment for near twenty horses.

Some few oxen are reared, and even fattened here, without being ever drawn : the owners think it more their interest to keep them at pasture ; and they certainly should be, and doubtless are, the best judges of what is most likely to turn to their own advantage.

SIR EDWARD LITTLETON is the greatest master of draught oxen in the county. He has now no less than eighteen employed in carting coal, gravel, his hay harvest, or any thing else wanted ; but I believe not at all in ploughing. They are drawn single in harness, geared exactly in the manner of horses, with the collars inverted, and open at bottom. Oxen for draught have been strongly recommended to the tenants ; but very few, if any, are in use on the whole estate, except those kept by the Landlord. I have no doubt but they would readily and gladly second the views of their Landlord in this particular, were it at all compatible with their respective interests : but the land is mostly strong, and the few who have tried oxen have declined them. Oxen were formerly much more used in this country than at present. As a more extended and improved cultivation has taken place, and the price of human labour has increased, they have gradually given way to horses. Agreeably to which idea I still find oxen now most prevalent in backward countries ; and more so in Wales than in England, where I have lately seen them in yokes, crawling at a rate so slow, that no farmer here could bear to see it with patience. The fact is, that every attentive cultivator will do his business in the best and cheapest way he possibly can ; and he must be a much better judge of this question than any theorist can possibly be : and the single fact of horses being preferred, is a sufficient proof of their superiority. In a public point of view, perhaps, the difference

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is less than has been generally supposed; for were oxen kept for draught instead of horses, though a farm might produce more beef it would produce less cheese and butter; which last have generally of late been rather the scarcest articles.

FARM-HOUSES AND OFFICES.

RESPECTING farm-houses and offices little can be said in general, except that those of ancient date appear often built merely by chance, without design or contrivance, whilst those of modern construction are sometimes well contrived, comfortable, and convenient. Most of the modern ones are built with brick, and covered with tile or slate. The barns, cow-houses, stables, and offices, are laid out so as to shelter a compact yard, and some instances occur of good convenient feeding-stalls; but most of the old ones are very defective in these particulars, and the occupier is obliged to make shift as well as he can.

In the construction of farm-offices oeconomy ought doubtless to be kept in view, and the money so laid out as to pay an interest to the proprietor; which will always be the case in real conveniences, for which the occupier had better pay interest than go without them.

In a regular farm, after a decent and comfortable house, the next buildings requisite are barns sufficiently roomy, with straw-sheds near enough for the thresher to deliver the straw to the cattle, with a well-fenced rick-yard, secured from trespass, near the barns. Stables for horses, cow-stalls, and calf-houses, and a feeding-shed also on a proper scale, is a good appendage to every farm. A Dutch or hay-barn, on an oeconomical and

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durable construction, would save the occupier so much trouble in thatching that he could afford to pay a consideration for it. This should be in the most convenient situation for the cow-houses, where the hay is consumed. Hogsties and troughs of durable materials, and in a convenient situation, are also necessary. These particular conveniences are well understood, and in some places have been properly attended to, but in many others are very defective.

Leases are often granted: those for twenty-one years are not uncommon, and some also for a shorter term exist. In most covenants fallowing is considered as necessary. Hemp, flax, and rape for seed are prohibited or restricted to an acre. Meadow land is secured from the plough. Tenants are restrained from cropping and lopping timber, and from taking more than a stated number of crops; also from felling hay, straw, or dung. I do not recollect many other remarkable covenants. Those for securing the rents are of course. Sometimes systems of cropping are inserted, but little attended to, if the tenant be supposed going on well. The tenant is generally tied to keep the buildings in repair, the landlord finding materials. Many gentlemen who have large estates round their seats, or in their neighbourhood, do not grant leases, upon the idea of such grants rendering their tenants independent; and to the honour of many such gentlemen it may be observed, that the possession of their farms upon such tenure is, equally secure with a lease, and that whilst the occupier behaves with propriety, he is as little liable to be disturbed in possession, and often rents upon easier terms.

WAGES AND LABOUR.

THE price of labour and the rate of wages vary in different places. They are always highest in the neighbourhood of flourishing manufactures, and lowest in remote parts of the country where no such manufactures are established. The wages of a day-labourer vary in this county from one shilling to one shilling and sixpence per day and beer. In the summer quarter, one shilling per day, with meat and drink, and the draught or carriage of a load of coals, is very common here. Much of the labour is let by the great at prices which enable a good workman to get two shillings or more per day and beer. Hedging and ditching are done by the perch, running measure; digging, by the square perch or rod; threshing, by the bushel: four-pence per bushel for wheat, two-pence for barley, three-halfpence for oats are the prices generally given, besides an allowance of beer, and a payment by the day for dressing or winnowing. Grass is mown at about two shillings per acre and beer; wheat is reaped for five shillings per acre and dinner, or whole board and beer, or thereabouts; it varies a little in different places. The hours of labour are, in winter, from light to dark; in summer, from six in the morning to six in the evening; in harvest, from the time the dew is off in the morning to night, in reaping and carrying; and at other work, according to the emergency of business. The price of labour has increased within the last two years about one tenth, or ten per cent; and the summer or harvest labour rather more; which has been supposed to be caused by the Canals cutting in the county, where a stout labourer can get two shillings and sixpence and three shillings per day, without beer. Perhaps this advance is but just, and in proportion to the advance of the necessary articles of life.

SOCIETIES, BENEFICIAL PRACTICES, PROPOSED IMPROVEMENTS, AND OBSTACLES TO IMPROVEMENT.

THERE are no Societies in the county that I know of for promoting agriculture. The principal inducements are good markets, self-interest, and perhaps in some degree a spirit of emulation between different occupiers, from which inducements some of the farms have been brought to a pretty correct state of good cultivation, and which will be still farther improved if all the above inducements shall continue. Mr. BRADBURN observes, respecting Societies, “ I have not heard of any. I should have been much pleased “ could I have answered in the affirmative.” Respecting a turn for improvement; “ I never at any period observed “ this neighbourhood shew more inclination to pursue the “ present improved system of husbandry :” and respecting real improvements, “ A more regular system of summer fallowing, “ and of not taking above two crops afterwards, would be “ more productive of both grain and stock.”

Amongst the best practices of the county, one should have been mentioned more fully before, which is the extensive application of lime as a manure, of which great quantities are annually and constantly used upon all sorts of land. It is supposed to attenuate, break, and divide strong soils, to bind and contract sandy ones, and to correct the acidity of old sour uncultivated lands. Its utility is very generally admitted. It is laid on at the rate of from six to ten quarter per acre ; the price at the Works being from three shillings and sixpence to four shillings and threepence per quarter, and the carriage and other expences nearly, and at some distances quite, as much as the prime cost. It is generally laid on fallow in spring or summer, and harrowed in, and is used both
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for turnips and wheat, and I think in a more extensive way than I have observed elsewhere. The improvement of lands by marling also has been long practised, and in a very extensive way.

The great Improvements of which this county is capable, seem to be chiefly the following : First, The cultivation of its wastes and unimproved land. Secondly, Extending the practice of improving land by irrigation, or watering, to all places capable of that improvement, and wherever the water is not already appropriated. Thirdly, The embankment of rivers to prevent the destruction of hay, with sluices constructed through such banks, to let through the water for irrigation at pleasure. A work of this kind I had the pleasure of seeing upon the Trent below Stone. But for this business to be done in the best manner, it should be taken up in a general way. Fourthly, Draining of fenny or springy lands. Much has been done, and much remains to be done in this way. Fifthly, The cultivation of the better and finer grasses, clean and unmixed with weeds, at the time of laying land to grass ; and though nature be very bountiful, and soon fills the turf spontaneously, yet there is great reason to believe this work would be much improved and facilitated by art and industry. These, with the extension of the best parts of our present practice, seem to constitute the highest perfection of agriculture to be expected at present, and indeed would add greatly to, and very much increase the landed products of the county.

Amongst the obstacles to improvement tithes have been already mentioned.

Another great obstacle to improvement is perhaps, pretty often, the want of sufficient capital in the occupier, not so much for the purpose of stocking his farm, as for that of pushing forward and getting through those undertakings which

which may be necessary to make his farm productive; the capital wanted upon a farm of any extent being very considerable; especially if such farm be in a backward or unimproved state. For though five pounds per acre may be a pretty good allowance for capital upon land already improved, it is by no means sufficient under different circumstances, and where a number of improvements are wanting. Fencing, ditching, draining, marling, liming, town manure, with the purchase and necessary support of stock till the effects of such exertions can come round, form obstacles insurmountable to a small capital; and the risk is too great for such to run, for fear of failing in the attempt. In all such cases I think the landlord should come forward by himself, or his agent, to advance money upon real permanent improvements only; such as draining, purchase of lime or dung, manuring on the turf of land in a fit state for permanent pasture; and should charge to the tenant interest (suppose at five per cent) for money so advanced. This, I think, would be a prudent reservation in leases—for the landlord to have power to lay out money in this way, and lay the interest on the rent; having not the least doubt but all money judiciously so laid out, would answer the purpose of every party concerned: of the landlord, by improving his land, giving him interest for his money, and the best security: of the tenant, by a certain and permanent improvement of his farm, which would well enable him to pay the additional rent: of the public, by removing an obstacle to, and by furthering the means of national improvement.

My neighbour, Mr. FOWLER, of Erdington, mentions the following obstacles, which he thinks should be removed.

“ The present law in limiting the number of horses on
 “ turnpike roads is not one of the least. If all carriages
 “ were limited to weight only, that must and would have

“ the desired effect of keeping the roads in good order.
 “ Suppose six horses were allowed instead of four, two of
 “ them would most likely be breeding mares or young horses
 “ likely to improve; the six would not require to be so large
 “ as if four only were kept, but of a lighter nimbler sort,
 “ and would be kept at a less expence than four, that are
 “ required to do what the six should do. There would be
 “ more probability that the seed would be sown in due season,
 “ that the harvest would be finished quicker, that more lime
 “ would be obtained for carrying on other improvements of
 “ the farm with the horses. I also think, if the tolls at turn-
 “ pikes were collected by the weight drawn, it would be much
 “ fairer than the present mode of collection by the number of
 “ horses. There is another obstacle to the improvement of
 “ land, the employment of Attorneys-at-law by some gen-
 “ tlemen of large landed property as their agents, who,
 “ although eminent in their profession, know little or nothing
 “ about the proper management of land, and consequently
 “ are unfit to give advice to tenants; unfit to be woodmen,
 “ and totally unfit to have the direction and management of
 “ landed property respecting its cultivation.” Mr. BRAD-
 BURNE, who is a considerable practical farmer, and upon his
 own land, says, “ If one or more Societies (for the improve-
 “ ment of agriculture) were instituted in each county, the
 “ members of such Societies would be more communicative,
 “ and a spirit of emulation might be excited.” Mr. CURTIS
 thinks the greatest obstacles to the improvement of land are
 “ poverty, and an aversion to innovation.” Due encou-
 rage-ment from landlords in furnishing materials for necessary
 reparations, and in not overwhelming a tenant with too heavy
 a rent, may be considered and ranked amongst the principal
 incitements to improvement.

TIMBER.

TIMBER, PLANTATIONS, AND WOODLANDS.

THE county of Stafford still continues well stocked with all kinds of timber, notwithstanding the immense quantities that have been cut down of late years. Amongst the many well-timbered estates, in the county, the following have been seen, and some of them particularly examined, by the Writer of this Report. Many well-timbered estates have undoubtedly been over-looked and are omitted; but the account of those which follow is sufficient to shew, that some attention has been, and is still paid to this article by many gentlemen of distinction and property.

The first and best timbered estate, is that of LORD BAGOT in the neighbourhood of Abbot's-Bromley. The woods extend over many hundred acres, and almost wholly consist of oak, the ripest, finest, and best that I ever saw; and I believe I run no risk of exceeding the bounds of truth, if I say the best in the kingdom. A very large quantity of oak in these woods is now quite ripe, and some even decaying. Many of the oaks carry timber to the length of sixty and seventy feet, and in LORD BAGOT's Park are many hundreds of very extraordinary bulk, containing from two hundred to four hundred feet of timber each. I could pick out many worth sixty guineas a-piece, and some even more. This timber is of considerable antiquity, and mentioned by Dr. PLOTT, as full-grown timber in 1686. I was informed upon the spot, that for these woods one hundred thousand pounds have been offered, and that his Lordship has half as much timber in Denbighshire. Total value of timber one hundred and fifty thousand pounds, which in the three per Cents at the present price, would purchase an income for ever, of more than six thousand guineas per annum. The succession woods and young plantations are very considerable, and still conti-

ning ; and as Mr. HARVEY, his Lordship's steward, very judiciously observes, upon land not worth a rent of ten shillings per acre, paying better, underwood included, than in any other way : and it is upon a poor cold land of this description, that the above fine timber chiefly abounds, the soil being a moist gravelly loam, upon a clay or marl bottom. The young plantations are made sometimes by sowing acorns, with wheat after summer fallow ; and sometimes by planting out young plants of oak, and other wood ; in which case, at the end of one or two years, when such plants have taken well to the ground, they are cut off at the surface, and the second shoot trusted to for the tree ; this second shoot thriving with much more luxuriance and vigour than the first, checked by transplanting. Also after cutting down a wood, the replanting is sometimes effected by striking in with the pick-ax a sufficient number of acorns and other seeds of Forest-trees or underwood. And all these methods have been attended with success. The young plantations are all well fenced, and carefully guarded from trespass by a woodman appointed for that purpose.

The second timbered estate, in my opinion, is Chillington, the property of THOMAS GIFFARD, Esq. whose hospitable and benevolent ancestry and family have resided here for many centuries. From this estate has been sold within twenty years, timber to the amount of thirty thousand pounds ; and the timber remaining on the estate is worth at least an equal sum. The succession woods and young plantations are here very extensive, and of luxuriant and vigorous growth. Some very fine ripe oaks grow on the side of a gravel road, near the Pool, a large and beautiful piece of water. In the modern plantations, oak has been particularly attended to : but there are many other varieties of timber-trees extremely promising in growth. The young plantations are well fenced, and secured from trespass, without which precaution

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planting would be in vain. This branch of agriculture, for I can call it by no other name, is peculiarly the province of the Gentleman; to whom I should conceive nothing can give a greater or more rational pleasure, than viewing the progress to maturity of these, as it were, the work of his own hands, whilst at the same time they improve his estate, and shelter and ornament the country.

Teddesley Park, Sir EDWARD LITTLETON'S. The house at Teddesley is a commodious, modern-built, elegant mansion, commanding an extensive view of a well-cultivated country, to the west, and of the hills and extensive waste of Cannock Heath to the east. The timber and plantations on this estate are very considerable. Mansley Wood is an extensive coppice of fine ripe oak timber; besides which there are many other coppices, dingles and clumps, of full-grown oak, ash, and other timber. The spring coppices and young plantations of different growths, as by information from Mr. HALL, the steward, cover at least one hundred acres; and in them the oak has been an object of particular attention. It is further to be observed, that these plantations are generally upon poor cold land; on a gravelly marl or clay bottom, on which the oak will succeed well; and which sort of land being of no great value for corn or pasture, is very properly applied to the growth of timber and underwood.

Wrottesley Estate, the property of Sir JOHN WROT-
TESLEY, Bart. contains some considerable woods of
ripe, well-grown timber. Also extensive plantations of
more modern growth. At Enville (LORD STAMFORD'S),
the woods and plantations within the circumference of the
pleasure-grounds are very extensive, and extremely well-stock-
ed with timber-trees, and underwood of every sort; amongst
which the oak predominates in great profusion, kindly, and
of vigorous growth. The woods of Upper Arcley are very
exten-

extensive, and well stocked with oak of various ages, from large timber-trees to saplings. Hagley-Park is out of the county, but close to the borders, adjoining the parish of Clent. I shall just observe, that it contains large quantities of exceeding fine ripe timber, of the better sorts, and of a first-rate quality. Some of the oaks are of great length and dimensions, and fit for any use to which oak is applicable. The parish of Harbourne is well wooded. The Bishop's woods in the neighbourhood of Eccleshall are very extensive, and said to contain one thousand three hundred acres: they are managed in a system, the exact particulars of which I could not learn; but understand that a portion is cut down every year, and when the one thousand three hundred acres have been successively taken, that which was cut first, is ready for cutting in a second rotation. A regular annual revenue is thus drawn from the woods without injury. Madeley Woods, near Newcastle, well stocked with oaks of different ages, were formerly a park, but "Ceres has reassumed the land," and the breaks and lawns between the woods are inclosed, and in the usual course of arable cultivation.

The plantations at Fisherwick (LORD DONEGAL'S) are of little more than twenty years growth, but very promising. BROWN, who projected these plantations, assured the proprietor, as I have been told, that he had planted for him one hundred thousand trees, and in a certain number of years, which he then mentioned, those trees would be worth one hundred thousand pounds. There is a possibility, that this prediction may be verified in the time of the present, who was also the then proprietor. Some of the oaks are even now worth fifteen shillings each, and they abound in profusion amongst firs and other sorts by which they are sheltered, and encouraged in growth. I observed some large ripe oaks in

the park; and in the pleasure-grounds an ash, which I believe contains at least four hundred feet of timber.

Broughton pleasure-grounds, or paddock (Sir THOMAS BROUGHTON'S), abounds with plantations, clumps, and shady spreading trees, particularly sycamores. On the other side of the road is a fine promising spring coppice of oak; the gradual thinning of which, by cutting out underlings, should be attended to.

Hilton Park, belonging to Mr. VERNON, contains plenty of flourishing oaks; and in the pleasure-grounds are some very fine ripe well-grown trees of this species, the pride of the forest: and a great variety of other timber-trees grow there in the utmost luxuriance. The rides and plantations are very extensive, and furnished in the most innumerable profusion, with evidence of the planter's vigilant attention. Mr. VERNON was a very early planter, and now, in the prime of life, has the pleasure of seeing some of his first efforts in this way fast approaching towards maturity. Many of the larches, and Scotch as well as other firs of his planting, contain twenty feet or more of timber, and are now in a very growing state.

Burntwood, near Ashley Common, belonging to Mr. MEYNELL, seems well-stocked with young plants of oak, and is very extensive.

The estates of Mr. GOUGH at Perry Bar, Oldfallings, near Eushbury, and Walton Grange, near Gnosshall, are all well timbered. Perry Park and neighbourhood has a good deal of ripe timber; considerable young plantations and trees of every progressive stage of growth. Oldfallings estate and neighbourhood is plentifully stocked with well-grown oak and other sorts of timber, and Walton Grange has an excellent oak coppice of considerable extent. Bentley estate, near Walsall, is extremely full of oak, both in coppices and hedge-

rows:

rows : the proprietor is Mr. ANSON. At Sugnall, near Stafford, I observed some small neat plantations, amongst which oak has not been forgotten. As this valuable tree succeeds well amongst others by which it is sheltered and encouraged in growth, but is liable to be over-topped by many others, which, more luxuriant, prevent its leading shoots from penetrating thro' their foliage ; such obstruction should annually be cut away, and the growth of oak encouraged as superior to all others, both in majestic beauty and national consequence. I observed this attention neglected in some of these plantations. Considerable woods and plantations grow on the Shutborough estate, (Mr. ANSON's), as well as on that of Sir WILLIAM WOLSELEY's ; and also upon Mr. CURZON's, near Rudgeley. The estate of Mr. FOWLER in this neighbourhood at Pendeford, is well-wooded, both in hedgerows, young plantations, single trees, and clumps of very fine well-grown oak : it has also a very promising coppice of oak. Other smaller estates in this neighbourhood are well stocked with timber, particularly that of Mr. FLEEMING at the Wergs near Tettenhall, where, amongst a number of well-grown trees of various species, I could pick out a few oaks worth thirty guineas a-piece. Upon the whole, the county is well-timbered, and has now in it succession growths sufficient for the supply of a great length of time ; and I have no doubt but the public spirit of the times will secure that supply to future ages.

I have two more observations to make on planting : the one relating to the proper scite of ground and situation of plantations, whether intended for ornament or profit : the other on the timber best adapted to fulfil those objects, and at the same time to answer the purposes of pleasure and profit to the planter, and of utility to the public.

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With regard to the proper ground for plantations, every gentleman or land proprietor of prudence and taste, who resides on his property, will furnish himself with a shady retreat from the burning sun, that shall afford at the same time a shelter from the storms of winter. For this purpose he will keep up a sufficient shade near his habitation, in that situation which local circumstances shall direct. Large plantations or coppices for profit should not be made on good land; always of much more value for corn or pasturage; but either on moist land of small value, upon a clay or marl bottom, where timber often grows well; or rather, where such land abounds, upon precipices, and sides of hills impracticable to the plough; and where it often happens the land unplanted is of little or no value. I have often observed, that timber succeeds particularly well in such situations; and the making plantations there is attended with many advantages:

1. The roots of trees twining and interweaving with the soil, prevent it being washed by torrents into the vallies, which is the cause why many such situations are now bare and almost void of soil.
2. The falling and putrefaction of leaves tends to thicken such soil, and render it by degrees richer and more capable of forcing the growth of timber.
3. Such land is often of little value, and incapable of being improved in any other way.

And I cannot refrain upon every occasion, from calling particularly upon all public and patriotic Societies to confine their premiums for planting, to land of small value; or impracticable to the plough. The corners of fields, where four unite, are not improper places for small clumps in any land: and in hedge-rows a few oaks, elm, or beech, are a great ornament, without doing an injury: but ash, always very injurious to arable and pasture land, should by no means be planted in hedges, but reserved for clumps and coppices.

Respecting the sorts of wood, oak is undoubtedly the first forest tree, but being slow of growth, the planter can seldom expect personally to reap the reward of his labour : it should, however, be always plentifully intermixed with other sorts, where it will be ready to supply their place, and fill up the ground when its inferior neighbours shall be cut away. I think, without a mixture of oak, no plantation can be improved.

Ash is an extremely useful and valuable wood for many purposes, but not very quick of growth ; requiring from fifty or sixty to eighty years, to arrive at tolerable maturity. Elm, the common or narrow-leaved is very proper for hedges and plantations ; it makes a large tree, in about the same time as ash. I have had some well-attested instances of very fine large elms having grown up in the life of a person, who remembered them planted. We have now in this parish, a fine square grove of elm upon Tettenhall Green, of about seventy years growth : the trees contain seventy or eighty feet of timber each. The witch elm has been known in several instances to grow amazingly quick : my Father was present at the planting of one in the paddock here at Pendeford, which being cut down at the end of thirty years contained sixty feet of timber, and was sold at one shilling per foot ; and I observed a most rapid growth in some upon this farm : the wood is of a good value, and this sort is equal to most in quick return to the planter. Respecting the fir tribe, planters have certainly been rather too partial here, tho' many of them are of rapid growth. The larch, the Scotch, and other firs, will often measure as many feet of timber as they number years of growth, or even more. I cannot but strongly wish, however, that every gentleman making a plantation of firs would intermix at least an equal number of English forest trees, and not forget oak. As such plantation proceeds

in growth, the trees least profitable may be cut away. Beech and sycamore are useful, and of tolerably quick growth, and are therefore a proper mixture with other wood. Many instances may be produced of the rapid growth of poplar, and the same individual has been known to plant and cut down poplars containing from sixty to eighty feet of timber each: and I remember the planting of some myself rather more than thirty years since, some of which now contain more than thirty feet of timber; the sort, the black poplar (*populus nigra*). This sort succeeds best on a moist soil, or by a brook side. The trees of this sort are apt in some seasons to die in great numbers, even when large trees. The white poplar, or abele (*populus alba*), makes a fine large tree, and will succeed on almost any soil. I have seen very large ones on the top of a high bank, and was shewn some in the plantations at Chillington lately of about twenty years growth. They are upwards of thirty feet high, and would measure four feet round at the bottom. The Lombardy poplar, so highly extolled some years back, is a mere weed in comparison of our own native trees before-named, and little superior to the aspen, the worst of the species. The Lombardy poplar in this country is a pole rather beautiful to the eye, but of no promise as a timber-tree. The wood of the poplar in general makes very good flooring-boards and packing-cases. Some of the willow species are remarkable for quick growth; and the loppings in the hop countries are useful for poles. Amongst plantations, perhaps, that of fruit-trees has been too much neglected: and the raising of orchards in this country may be ranked with its agricultural improvements, as producing an useful article, little interfering with its present productions.

In the foregoing account of woods and plantations, it is very possible that many considerable ones may have been omitted, as not coming under the Writer's observation.

MISCELLANEOUS REMARKS AND OBSERVATIONS, MADE IN A TOUR THROUGH THE COUNTY IN THE SPRING OF THE YEAR 1794, NOT INCLUDED IN THE AFOREMENTIONED ARTICLES.

·CALLED at Fisherwick, the noble Seat of the Marquis of DONEGALL, on the west Bank of the Tame.

Here the genius of a BROWN, aided and seconded by the munificence of the noble owner, have conspired to render a dreary morass one of the most delightful spots in nature, and have in a great measure succeeded: which success is still further heightening by the improvements of Mr. ELKINGTON, in the interception of springs, and the discharging of stagnant water. The house and offices here are nobly magnificent, and the hospitality within correspondent. The shrubberies and plantations are not an exact copy of nature, but that improvement and embellishment of nature itself, which was reserved for human art, ingenuity, and industry. A small brook from Freeford, which here falls into the Tame, assumes through art the grandeur of a noble river; and even exceeds in appearance this river, except indeed when the Tame after a profusion of rain, overflowing its banks, appears like an immense lake. The demefne at Fisherwick consists of nearly a square mile, or about six hundred acres. The pasture part of it is stocked with deer to the amount of three hundred couple, or more;

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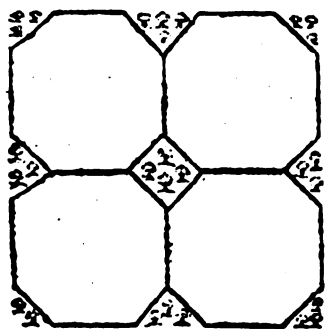
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also with horses, cows, and sheep. A considerable part is mown for hay, and the mown land kept in good heart by the overflowing of the Tame.

The cows here are very good, of the long-horned breed, thick and heavy in the carcass. The sheep are of different breeds; Leicester, Wiltshire, South Down, Cannock Heath, and crosses from these. The South Down wethers had been killed with much profit, as the steward informed me. A few South Down ewes still remain: they are a thick square small sheep, to which the natives of our own commons, where they are bred with attention, bear a great similitude. But no respectable farmer here, with an inclosed farm devoid of common right, would think them good enough for his inclosed pasturage, unless as annual stock.

I am obliged to the Rev. Dr. FALCONER for his remarks on some of the parishes in this neighbourhood, which made my own examination of them less necessary. His remarks extend to Fisherwick, Whittington, Tamhorn, Elford, Wigington, Hefclor, Thorp, Constantine, Clifton Campville, Harenton, Harleston, Statfold, and Scierfcott. In this tract of country, the banks of the Tame are good meadow land. The upland in Fisherwick, Whittington, Tamhorn and Statfold, rather inclines to a light or gravelly soil. The other parishes or lordships are a strong or mixt loam: the courses of crops are the same as mentioned under that article. Some considerable dairies are kept, and cheese is the main object of such dairies. The sheep are pretty generally of the Leicestershire breed. The country is wholly inclosed, except two commons or wastes, which are Whittington Heath, consisting nearly of six hundred acres, where Lichfield races are held. It is now a good sheep walk, and would, if inclosed and cultivated, be some of the best turnip and barley land in the county. The other common is at Clifton Campville, now a
good

good sheep-walk: it contains about four hundred and fifty acres. The inclosing of it is in contemplation. This country is in many places subject to wall-springs, which are cured by underdraining. Very little timber grows in these parishes, except at Fisherwick and Tamhorn-Park, which latter, though a woodland, is more productive of rabbits than timber. The roads in these districts are generally good. The cows at Tamhorn are subject to the foul water. Dr. FALCONER concludes his remarks with observing, "that labourers' wages have lately advanced so much in this neighbourhood, that it is not easy to ascertain the average price: female servants, in particular, can hardly be hired at any price. It is attributed to the employing so many women in the different cotton-mills lately erected. Some regulation respecting the wages of servants employed in husbandry would be of universal use." Respecting timber and planting, the Doctor submits the following plan to the consideration of the Board: "That in every Act for an inclosure, a clause should oblige the proprietor of the new inclosed land to plant a certain number of oaks in proportion to his share of the inclosure, and should direct the



" plantations to be made in the
 " angles of the fields, agreeable
 " to the annexed sketch: by
 " adopting which plan, a less
 " quantity of posts and rails
 " would be required, and the an-
 " gles of each field would be con-
 " verted to a profitable use, and
 " corn would grow close up to the
 " rails: whereas no corn will now grow in such angles. This
 " is not the only advantage that would arise from this plan:
 " the trees full grown, would afford good shade for cattle, and

“ an easy communication through these plantations would be
 “ found from field to field. It would also be very ornamental
 “ to the country.”

The stock of cows in this district are generally long-horned, and of superior quality. Considerable tracts of excellent meadow-land, subject however to floods, are found on the side of the Tame. On the Trent also, we find excellent meadows; the hay-meadow at Burton, which is a kind of public property, would be worth many guineas per acre, if rented. Burton is a considerable town, both of trade and manufacture.

Tutbury is a pleasant little town, containing nearly one thousand inhabitants, with a lately established cotton-work upon a considerable scale: it does also some business in the wool-combing branch. Tutbury-Castle, now in ruins, stands on a lofty eminence, stupendously overhanging the Dove, the meandering of whose waters, and the range of fertile meadows on whose banks, may from hence be traced to a great distance either way, up or down. This eminence, abruptly formed by nature, has been rendered less easily accessible by the defensive military arts of former times. It is composed of an immense heap of marl. The ruins of the building are principally of hewn free-stone, with admixtures of gypsum; it has apparently been battered from a hill on the contrary side of the town. The property is in LORD VERNON of Sudbury, in this neighbourhood. Here is a draw-well of good water, but of considerable depth; low enough, I suppose, to be supplied from the Dove. On the declivity of the castle-bank, on the west-side, I observed the following remarkable plants.

1. Dwarf elder, (*sambucus ebulus*), in great plenty.
2. Wild teasel, (*dipsacus sylvestris*), in considerable quantity.

3. Wild

3. Wild wood, or Dyer's weed, (*reseda luteola*), a few specimens.

Having often observed the first and third of these plants in similar situations about the ruins of old castles, I am led to conjecture, that they have been formerly cultivated in these places for some use.

The fertile meadows on the banks of the Dove are an object considerably interesting. This river, which, in the first part of its course, separates for many miles the counties of Stafford and Derby, rises from springs under the lime-stone hills of the Moorlands and the Peak; and at times receives an amazing addition from torrents rushing down those hills, after heavy rains or the melting of snow. Its channel has a great declivity, and in many places this river comes tumbling over the rocks in cascades; and in its greatest swell pushes on with great rapidity, which continues to below Rochester, where the water has a greyish cast, apparent to the eye, from its being impregnated with calcareous earth, to which undoubtedly may be attributed the extraordinary fertility of its banks. For after receiving the Churnet, a considerable stream from a part of the Moorlands, not abounding with lime-stone, its water becomes diluted; and although its banks still continue excellent, yet they visibly decline in richness, and the extraordinary fertility ceases. Immense quantities of lime-stone are found both on the banks and in the channel of the Dove, in the first part of its course: this lime-stone has fallen in length of time from precipices, which over-hang the river. The fertility of land on the upper parts of this river, about and above Rochester, is, and always has been proverbial, "as rich as Dove;" being an epithet applied to any spot highly forced. This land has a perpetual verdure, and the spring-floods of this river are very gratify-

ing to the land-occupiers, who have this proverb, "In April
 "Dove's flood is worth a King's good." It is also said of
 Dove-banks in spring, that a stick laid down there over-night
 shall not be found next morning for grass. It is very certain
 this river fertilizes its banks like another Nile; but some-
 times rises so high in twelve hours as to carry off sheep and
 cattle, to the great alarm of the inhabitants, and in as few
 hours abates and returns again within its own channel. Be-
 low Rochester, where this river receives the Churnet, the plain
 spreads very wide, and continues so with variations to below
 Uttoxeter: the plain here on either side the river is com-
 posed of deep rich mellow loam, impregnated with, if not
 wholly formed of a rich sediment of mud and calcareous earth.
 The herbage is very fine, without any mixture of rushes or
 aquatic plants. The grasses are of the common sorts: but the
 foxtail, the vernal-grass, the *pan's*, the dog's-tail, and the mea-
 dow *bronus's* predominate. It contains also rib-grass, mea-
 dow and white clover, upright crowfoot, and the common
 herbage of other meadows: not without a mixture of the
 cursed or common thistle, or saw-wort, (*ferratula arvensis*),
 so common in every soil and country. The plain within reach
 of the floods of Dove, extends in some places to near a mile in
 breadth, particularly opposite Uttoxeter, and amounts to sever-
 al thousand acres, almost entirely pastured with cows, sheep,
 and some horses; very little of it being mown for hay. The
 uncertainty and suddenness of the floods make the risk of hay
 too great. The rent of the Dove land generally rises to
 near forty shillings per acre; and I was informed by an eminent
 grazier on the spot, that were it not for the inconvenience of
 floods, the land equally rich as at present, would be worth ten
 shillings per acre more, even for grazing: as it sometimes
 requires a sharp look-out to preserve the stock from drowning,

even when there has been little or no rain on the spot. A sudden rain or melting of the snow on the Moorland or Peak hills is sufficient to inundate large breadths of land near this river: as the declivity or fall is great, the swell of water is sudden, but soon over, and the largest floods continue but a few hours. It is to be remembered, however, that the extraordinary fertility of these lands is owing to this circumstance, however complained of as an inconvenience.

The most remarkable wild or native plants, that I noticed growing near the Dove, were,

1. Wild rape (*brassica napus*); as luxuriant as any I ever saw cultivated.
2. Tansey (*tanacetum vulgare*).
3. Water mustard (*erisimum barbarea*).
4. Butterburr (*tussilago petasites*).
5. Jack by the hedge (*erisimum alliaria*).
6. Hemlock (*conium maculatum*).
7. Figwort, or water betony (*scrophularia aquatica*).

SOME PARTICULARS OF THAT PART OF STAFFORDSHIRE CALLED MOORLANDS, NOT INCLUDED IN THE FOREGOING ACCOUNT.

THE North part of Staffordshire, called Moorlands, is situate to the North of a line conceived to be drawn from Uttoxeter to Newcastle under Line. The face of this part of the county is various, but in general hilly, with large tracts of the land waste, or uncultivated. The first market-town from

Uttoxeter is Cheadle, situate in a pleasant vale of good mixed soil, but surrounded by rude and barren hills: these hills are composed of huge heaps of sterile gravel, that on the west side overhang the town. The principal herbage on this hill consists of broom, heath, whortleberries, mountain cinquefoil; all beggarly and of diminutive growth: also of milk-wort, the mountain *carex*'s, matt-grass, *cylus*'s, and knap-weeds. The hills north and west of the town, in the parishes or liberties of Cheadle, Tean, and Dilhorne, are of the same material, upon an understratum of sand or sandy rock: the herbage the same as before, but pitiful and beggarly: amongst which heath (*erica vulgaris*) is generally most predominant. These barren wastes are pretty extensive, and not worth, I think, one shilling per acre as pasturage for sheep, or any other animal: they are, I fear, generally too poor and beggarly to be reclaimable by cultivation for the purposes of corn or pasturage. I cannot, however, help entertaining a strong idea that they might be converted into coppices and plantations of timber and underwood: the Scotch and other firs and sycamore would probably succeed. This last is now become a valuable wood, being worth from eighteen pence to two shillings per foot, at Birmingham, and has, I understand, succeeded well in some very exposed and barren situations. Perhaps, many other of our native timber-trees might succeed, intermixed with these, as one would shelter and screen another. To give any such plantation a fair chance of success, I should propose to begin not on the summits, but on the declivity of the hills: and as such first plantations increased in growth, to proceed with fresh ones nearer the summit, till the whole should be covered: by which management the plants of strength and growth would be made to protect and shelter those of tender age. The putrefaction and rotting of leaves from such plantations would increase and enrich the surface soil; and as they

came to maturity, the woodlands, upon plain and practicable ground, might be cleared and converted into arable and pasture land. If such scheme be practicable, which I think it certainly is by judicious management and perseverance, these dreary barren hills, which now convey an idea of nothing but poverty, want, and misery, would not only ornament and beautify the country, but, by furnishing it with timber and wood, would answer the purposes of more valuable land, and enable an equal breadth of plain woodland to be converted to pasture and arable, without rendering the supply of these necessary articles uncertain or precarious.

The commons or wastes between Cheadle and Oak-Moor, called Hay-shutt, Ranger, and Aulton Common, consist of an immense number of rude heaps of gravel upon an under-stratum of soft sandy rock, thrown together without order or form, or rather into every form that can be conceived, into sudden swells and deep glens, with scarcely a level perch: the mind, endeavouring to account for their formation, must conceive it owing either to some violent convulsion of nature, or some strange confusion of matter. This tract, impracticable to the plough, now rough, barren, and bare, might be improved into woodland and plantations, and some open spots of the most favourable aspects might be reserved for gardens to cottage tenements, and cultivated with the spade and hoe. Above Oak-Moor, to the north-east, I had the pleasure of seeing the idea before stated of planting precipices executed. A plantation has been made there on a declivity as barren, rocky, and bare of soil as any before described. This plantation seems about twenty years old, is in a thriving state, and contains the following sorts, viz. Scotch fir, spruce, oak, lime, birch, fallow, and mountain ash. This is the highest improvement to which the sides of barren precipices can possibly be brought by human industry;

and I think that all our public and patriotic Societies who offer premiums for planting, should confine such premiums to grounds impracticable to the plough, or of small value, not exceeding *per* acre a small specified sum. I consider extensive plantations upon rich level, arable, or pasture land as a public nuisance and national evil, at least so long as there are large tracts of the above description remaining unoccupied.

A little north of Oak-Moor the lime-stone country begins, and extends over a great breadth of country to the north, east, and west, in many places rising out of the main surface in huge cliffs. The Weaver Hills are of considerable extent. They are composed of immense heaps of lime-stone, which I was much pleased to find covered with a rich calcareous loamy earth, capable of being improved into very good arable or pasture land. They are inclosed in large tracts by stone walls, but not subdivided, and large breadths have never undergone the least improvement; which I much lament, as the neighbouring lands which have been improved are covered with an excellent fine turf, and bear good crops of grain. These hills are a very elevated situation, overlooking, or at least as high as any of the Moorland or Derbyshire Peak hills, which may be seen from their summits. I believe them to be from one to two hundred yards perpendicularly higher than any of our hills in the south of the county: the fall even from the foot of these hills to the highest parts of the Dove or the Churnet is very great, and these rivers are very rapid. On one of the summits of these hills, in a very red soil, I found growing indigenous my old friend, which I had long since cultivated, the upland burnet (*poterium sanguisorba*). This plant I have never before seen or heard of as a native of Staffordshire; but it is very common in the calcareous soils of Rutland and Bedford, being

ing a very different plant to the meadow burnet (*Sanguisorba officinalis*). The herbage of these hills contains many good plants, both grasses and trifoliums, but the hills are much overrun with uneven lumps, which seem to be worn out or, decayed ant-hills, covered with moss or lichen; and though they are a tolerable sheep-walk, I must consider them as little better than waste, and capable of a high degree of improvement by cultivation. Stanton-Moor, to the east of these hills, is a considerable waste on a lime-stone. The sheep-stock of this country has been mentioned before.

Large quantities of lime are burnt upon Cauldon Low, and elsewhere in this neighbourhood, and there are marks of lime-kilns formerly on Weaver Hills. Lime is much used here as a manure, being sometimes laid on ploughed ground, and at other times on turf, with very good effect in fining such turf. It has been remarked, that after liming a coarse turf white clover has been produced in abundance, where that plant had not been observed before. The lime-stone here is intermixed with a proportion of gypsum or alabaster.

In a large tract of this country the fences are almost wholly stone walls. This practice I cannot but consider as barbarous. Quickset fences are much cheaper, better, more durable, vastly more beautiful and ornamental, and make the country and climate more temperate; for in winter the quickset affords much better shelter against storms of wind, rain, snow, or hail, to man or beast; and in summer, by its refreshing shade, renders not only more bearable but pleasant that solar heat which, under a stone wall, reflected into a focus as it were from a burning glass, is always insupportable. The fanning breeze, the gentle zephyr, and those other pretty fancies of the poets, are unknown, and because never felt would never have been conceived here. I hope the owners and occupiers of land will have so much regard for

their own interest and the symmetry and beauty of their country, as by degrees to do away this invention of barbarous ages, and a violence to nature, by planting quicksets, to which the stone walls would be a fence and shelter on one side. With the quickset should be planted in corners and proper places clumps of trees, and in the fences a few oak; elm, witch-elm, sycamore, and other forest trees, but not ash, which should be in the clumps: these both afford shelter to cattle and ornament the country, as well as turn to the great advantage of the proprietor. When the quickset fences shall have been reared, the lime-stone walls burnt may turn to good account as manure, and the grit-stone will be ready to repair the roads. This improvement, and some others before named, which I cannot but strongly recommend, once completed, posterity will wonder why the country was called Moorlands.

The Moorlands, in point of elevation, are far above anything we have in the south part of the county, rising perhaps at least from 100 to 200 yards perpendicular above the general level of that country, hill above hill and plain above plain, on which heights large tracts of inclosed pasturage are situated. This elevation greatly increases the degree of cold, by combining the different causes that produce it, and by being more exposed to the elements of air and water in every form and variety of wind, hail, snow, or rain. The air here, considerably more rarified, is less capable of retaining the solar rays; the country is almost in a state of nature; it has no cloathing nor shelter except the stone walls, which have no effect whatever against the cold. Such a system of inclosure is completely barbarous. Plants, as well as animals, in this climate require shelter and cloathing, or must be starved and limited in their growth. I am firmly persuaded that the calcareous part of the Moorlands, after quickset.

quickset inclosures, and a sufficient number of plantations on the precipices and summits, shall have acquired some maturity, may be improved into one of the finest tracts of land in the county. The calcareous part of the Moorlands, or that on a lime-stone bottom, is pretty extensive, reaching in length from the Weaver Hills to Longnor, and in breadth from the Dove to Morredge, including fifteen or sixteen parishes and fifty or sixty square miles. The quantity of lime-stone here is inexhaustible, being in many places in strata of immense thickness. This is the best part of the Moorlands, and the soil seems to have a natural aptitude for producing a fine herbage of grass; and to the credit of the people here I must observe, that their breed of cows of the long-horned kind are generally superior to those in the south of the county, where the land has been longer in an improved state. I attribute this to the plough and to the growth of corn, the chief consideration in the latter division, while stock here has been the principal object. But this general rule, like most others, must be admitted with some exceptions.

Not far from Okeover I observed a practice well worthy, perhaps, of imitation in other places, of washing young quickset hedges with lime-water to prevent their being browsed on by cattle.

Cabbages for cattle are planted in the fields near Okeover, and the ground is well prepared. The extent of meadow-land on the Dove is here much narrower than lower down. In a meadow where the water has been suffered to stagnate too much, a large quantity of the *polygonum amphibium* grows. The plantations at Okeover are flourishing with a due proportion of oak. The house and offices are neat, pleasantly situated in a paddock of excellent fine turf, commanding a view of the Dove and its banks, with a neat gothic church at the very door. The paddock is well stocked.

stocked with deer. At Ilam is a pleasant seat, the property of Mr. PORT, but occupied by Mr. CLIVE. The romantic situation of this place suggests the idea of a glen in the Alps. Here two considerable rivers, the Hants and Manyfold, burst from under the lime-stone hills, after a subterraneous passage of several miles, in separate streams, which has been proved by throwing corks into the streams above. The precipices which surround the valley in which Ilam stands, are well clothed with oak and other wood; and the pleasure-walks from the seat on one of these precipices are wonderfully romantic and various. These pleasure-walks resemble shelves, one almost perpendicularly above another; by the side of which Nature, with scarcely any assistance from Art, has furnished a profusion of flowers of no contemptible appearance; amongst others, native geraniums of sorts, particularly the *Robertianum*, also the *centaurea scabiosa*, and many other showy natives whose names, for want of minutes on the spot, I have forgot. In a meadow over the water the ramson (*allium ursinum*), a very showy flower, but no very desirable pasture plant, flourishes in profusion. The subterraneous rivers here are very considerable, at least equalling the Dove. In a lime-stone grotto, and elsewhere, there are several specimens of petrified fish, some of them apparently in the spot riveted by nature, others brought from elsewhere: some of them of the carp or barbel kind, seem to have weighed when alive two or three pounds each. In a grotto here, CONGREVE is said to have composed some of his plays; and indeed the situation is very advantageous for composing: the shady bower above, the murmuring stream below, the recluse and retired situation, without the reach or hearing of noisy intruders, all conspire to fix the mind upon its individual object, and enable it to send forth an effusion of its collected powers.

The subterraneous rivers, after bursting up here, form two very fine cascades. From these pleasure-grounds we view a very bold and romantic prospect of two hills, called Thorp Cloud and Bunster, on either side the Dove: the latter, in Staffordshire, is an immense heap of lime-stone, but covered with a light earth, and well stocked with rabbits. Between these two hills the Dove falls in abrupt cascades, but is not in any degree superior to the subterraneous waters before named. Here are large quantities of lime-stone fallen from the over-hanging precipices. The highest summit of Bunster I estimate at 300 yards perpendicular above the Dove, and the fall of Dove from hence to Trent 200 yards more. The sides of these immense precipices of Bunster have a scattering of wood, which I doubt not might be easily increased in any desired proportion. The sorts are principally maple, elder, hazel, and hawthorn. The remarkable plants on this mountain are sedums, geraniums, veronica's, hypericums, and a savoury sweet-smelling mint; also a very rank *galeopsis* in some places; also on some of the summits, in great plenty, the mountain stitchwort, and a very diminutive *galium* amongst nettles, and a rank moss. The ridge of this mountain terminates, in some places, in a number of conical sugar-loaf hills of bare lime-stone. This hill, though of great elevation, is not nearly equal to the Weaver, nor so high as some of the Peak hills over the Dove.

To corroborate the justice of the idea of planting precipices, I had the pleasure to find the stumps of some very large ashes which have been sawn down on the declivity of Bunster, facing Ilam, sitting on one of which of more than a yard diameter I make this memorandum, May 29, 1794; and I cannot but persevere upon every occasion in strongly impressing and enforcing this idea, as the dreary aspect of a great tract of this country is wholly owing to the neglect of

the land-proprietors and occupiers in not raising quickset fences and plantations on the declivities; and it is one of the greatest absurdities and neglects in agriculture that this bleak, elevated, and exposed division should have remained so long, and should still continue, in a naked state.

One circumstance, however, in the farmers management here deserves commendation. The land is naturally much more adapted to grass than corn, the better sorts of grasses, and many of the trifoliums being produced spontaneously. To encourage their growth little more is wanted than to extirpate their enemies, the more luxuriant weeds, or the bushes of furze and heath. Accident, or the discernment of the occupiers, has adapted their management to this circumstance, and the much greater proportion of the land is pasture, stocked with cows and long-wooled sheep: the pasturage would be much improved in many places by pulverization, and by sowing clovers, trefoils, and hay-seeds. This is not in all places practicable, on account of the rocky surface, although large tracts inclosed with stone walls, but never yet cultivated, might be thus improved. The lime-stone under-stratum is generally covered with a calcareous loam of different qualities and depths. Where it is dry, friable, and sufficiently deep, it is rich; and with its spontaneous herbage only it is admitted to be good feeding land, but solely, as they say, for three months in the year. This is accounted for from its naked state and exposed aspect. It would undoubtedly give good crops of any grain. The thinner soils nearer the rock not having a furrow of soil, are good sheep-walks, and are not subject to burn in any season. The moister and more tenacious loam is the worst of all, but might be improved by draining; but the stone fences do not even admit of ditches.

Mill Dale, near Alstonefield, is a long, narrow vale or glen, of great depth. The sides consist of over-hanging precipices of lime-stone, estimated to be from 100 to 150 yards of perpendicular elevation, and so very steep, that they can be clambered up but in very few places. The width of this glen, vale, or dale, at the top, scarce exceeds the depth of its sides: it seems formed by the bursting or breaking of the hill which composes its sides, occasioned by a want of solidity in its bearing. The vale of Manyfold is situated between Wellon and Butterton, where the waters of the river Manyfold are absorbed by the fissures under the lime-stone hills, and discharged again at Ilam, four miles below. The warmest imagination can scarcely conceive a spot more extravagantly romantic than some parts of this vale. Thyrsis's Cavern here is a considerable excavation, pretty high up the side of a lofty precipice: it has somewhat the appearance of the inside of a Gothic church, and appears to me to be a work of art. Starlings alone are its present inhabitants. Near this place, by the road side, the upland burnet, *poterium sanguiferba*, grows spontaneously. At Exton, or Ecton, is a very considerable mine of copper and lead, the property of his Grace the DUKE OF DEVONSHIRE; and there are other mines of the same metals in this district. The calcareous or lime-stone bottom ends at Morredge; and the understratum in the tract of country west of Leek and of this waste, is generally sandy or gravelly clay, or grit-stone rock. This part of the country, north of Mole Cop, is the worst part of the Moorlands and of Staffordshire, the surface of a considerable proportion of this land being too uneven for cultivation. Large tracts of waste land here, though so elevated in point of situation, are meer high moors and great moles; and of this sort are a great part of Morredge,

Axedge, the Cloud Heath, High Forest, Leek Frith, and Mole Cop, though ranking amongst the highest land in the county. The summits of some of the hills in this country terminate in huge tremendous cliffs, particularly those called Leek Rocks or Roches, and Ipstone's sharp cliffs, which are composed of huge piles of rude and rugged rocks in very elevated situations; piled rock on rock in a most tremendous manner; astonishing and almost terrifying the passing traveller with their majestic frown. Here single blocks, the size of church steeples, are heaped together; some overhanging the precipice and threatening destruction to all approachers, and some of prodigious bulk have evidently rolled from the summit and broke in pieces. These stupendous piles, the work of Nature, are a sublime lecture on humility to the human mind; strongly marking the frivolity of all its even greatest exertions, compared with the slightest touches of that Almighty hand which placed them here; in whose presence all flesh is as grass, and the proudest productions of the highest efforts of human genius, are but as chaff. The speculative mind, in endeavouring to account for their origin or formation by any known laws, agency, or operation of Nature, is lost in amazement, and led to exclaim with the Egyptian Magicians, "this is the finger of God;" for the most superficial observer may perceive that it is his work. Leek Rocks or Roches are composed of a coarse sandy grit rock; those of Ipstones have for their basis gravel, or sand and small pebbles cemented together.

Upon Morredge and Axedge commons large quantities of peat are dug for fuel, and a number of labourers were digging it when I examined this country the beginning of June 1794. The peat mosses on Morredge were generally three or four feet deep; the soil afterwards was a gravelly clay. The peat both here and on Axedge is porous as a

sponge, and equally retentive of moisture ; so much so, that it was now, and I believe always is boggy, notwithstanding its high situation and a dry season, and yields so much water from pressure that it furnishes small lakes in the hollows, rivulets down the declivities, and starves the natural herbage around ; so that scarcely any thing flourishes, or indeed grows, on or near these spots except heath (*erica*), and that starved, whortleberries, the cottony rush or grass (*erriophorum*), *carex*'s and rushes. I can have no doubt but these high bogs may be easily drained : the fall is instantaneous, the cutting of drains easy, and stone in any quantity on or near the spot. Indeed another great obstruction to the improvement of these lands is the immense quantities of stone lying on, or of rocks rising out of, and above the surface. This would be somewhat lessened by such draining, as from the huge tremendous cliffs in which the hills above-named, and many others in this neighbourhood, terminate, immense fragments of broken stones have fallen in every direction. It is evident that these rocks in some early period have fallen in pieces, either by some violent convulsion of Nature, or more probably by an alteration in the earth's center of gravity, from some agency under the immediate will of the Almighty Creator. These stone cliffs and fragments cover a considerable extent of land, particularly about Ipstones, Wetley Rocks, Leek Roches, to the west of Flash, High Forest, the Cloud Heath, and Mole Cop common, with the waste north of this last, and indeed in many other places. Here the warmest or most sanguinary friend to agriculture can expect little more than sheep walk or plantation ; and I cannot but most strongly and repeatedly call upon the land proprietors to attempt the latter, in which I have no doubt but a persevering attention will be crowned with suc-

cess; and by which such land will be brought to the highest state of improvement possible.

It is, however, an encouragement to attempt other agricultural improvements in uncouth spots, when every attentive observer can remark, that some such spots here, which have been levelled, cultivated, and improved, are now covered with a very good and fine herbage fit for pasture, and seem very gratefully to have answered or exceeded every expectation that could reasonably have been formed by those who attempted and executed such improvement. There is in all the Moorland soil, whether upon a calcareous or grit bottom, a staple, or a something, which has a tendency to produce pasture; so much so, that the pastures here, however thin the soil, or near the rock, never or scarcely ever burn or parch from drought. This upon the lime-stone bottom I should have expected; but upon the grit bottom should scarcely have believed, had I not in part seen, so far as the advance of the season, by no means a moist one, permits me, and had I not farther been informed from good authority that symptoms of drought are here scarcely ever observable. Perhaps the climate or temperature of the atmosphere on this high ground, naturally cool, may in some degree favour this tendency to summer verdure.

Oat bread is eaten very generally in the Moorlands, and none other kept in country-houses; this, however, I cannot consider as any criterion of poverty, or of a backward or unimproved state, as I think it equally wholesome, palatable, and nutritive with wheat bread, and little cheaper even here; for upon enquiry at Leek I found the oatmeal and wheat flour nearly the same price. For several days during my stay in this country I eat no other bread from choice, preferring it to wheat bread, and rather wonder it is not more general, and kept in London and elsewhere for such palates.

palates as prefer it. In the remote country villages it is often baked thick, with four leaven, and a proportion of oat-husks : this, even when grown mouldy, is eaten by the natives without murmuring.

South of Mole Cop the country alters, and can no longer be termed Moorlands. Here a regularly inclosed country commences, with all the beauties of quickset inclosure, shelter, and shade. The Potteries are of considerable extent and population, and very much a national object. The Trent and Mersey Canal, which passes through them, has been a very great convenience in the conveyance of heavy articles used in this manufacture ; which circumstance, united with the genius, spirit of enterprize, and exertion of the masters and workmen, has happily succeeded in raising this manufacture in a very rapid manner, from small beginnings, to its present importance and national consequence. The great improvements introduced into this manufacture by Mr. WEDGWOOD and others, will be for ever an honour to their memory, and rank them among the benefactors of mankind. The cream-coloured ware has all the neatness and elegance of porcelain ; is in very general use, and is wrought into a vast variety of forms for purposes both useful and ornamental. The raw material used in this business being of little or no value, the amount of value of the manufactured article, which is very considerable, and a great addition to the national capital, may be considered as wholly created by the industry of those concerned and employed in this manufacture ; by the success of which, Burslem and Hanley Green, from small villages, have rapidly swelled into large market-towns, and are now equal in population to Newcastle and Leek ; besides which, the Pottery includes a number of populous villages scattered over this neighbourhood. Mr. WEDGWOOD is no inconsiderable planter. His seat and pleasure-grounds at Etruria are laid out with :

with neatness and elegance, and very much ornament the country.

The land here is in general cold, inclining to a stiff soil, which continues to near Leek, within a mile or two of which its quality improves. From Leek, three or four miles towards Ashbourn, the land is very barren and rocky; yet about the church at Ipstones, and from thence to Bellmont, it is much improved, and in many places is good pasture land. Ipstones sharp cliffs have been mentioned before; to the south of which is Bellmont, the seat of EDWARD SNEYD, Esq. pleasantly situated on the western declivity of a romantic glen, the slopes of which are well covered with oak and other wood, with a brook murmuring through the bottom into the Churnet. Mr. SNEYD's plantations are extensive, and of all the different stages of growth from infancy to maturity, I had the pleasure of observing some recent ones upon barren rocky land impracticable to the plough, where the young plants are healthy and promising. Had every gentleman who has landed property in the Moorlands improved his estate in this way in an equal degree with Mr. SNEYD, I should have had little occasion to have complained of the "nakedness of the land" in so large a portion of this country.

Rare Plants in Mr. SNEYD's Woods.

1. Cow-grass, or Cow-wheat (*melampyrum sylvaticum*), recommended by WITHERING as an excellent cow herbage. I found the same plant since in the woods at Upper Areley, and hedge sides, Walsall wood, and Brownhills.

2. Yellow pimpernel (*lysimachia nemorum*).

3. Bearsfoot (*helleborus fœtidus*.)

4. Crimson grass vetch (*lathyrus nissolia*.)

5. Spleenwort, (*asplenium scolopendrium*.)

6. Angelica

7. Golden saxifrage, (*chrysosplenium alternatifolium*); besides many other curious plants in common with other places.

Mr. SNEYD informed me that the wintergreen (*pyrola*) is common in the neighbourhood.

Passed Trentham, the seat of the most Noble MARQUIS of STAFFORD. Here the hanging wood with its umbrageous foliage, the verdant lawn with its beautiful shady-spreading trees and clumps, promiscuously, as it were, disposed in infinite variety; the spreading sheets of water with their accompaniments of impervious shade, and lost to the eye by their length and winding behind the swelling hill and shady copse; have an effect truly magnificent and worthy of the noble owner: the house and offices are correspondent. This place for the beauties of shade, water, and turf, united, has few equals and no superior.

Near Newcastle are made large quantities of excellent blue tile, for covering buildings, which on account of their superior quality in duration are sent to a considerable distance.

From Talk on the Hill I proceeded through Audley and Balterley to Betley. The country is inclosed with quicksets, well planted, and the timber-trees are of luxuriant and flourishing growth. The soil in general is a mixt gravelly loam; the understratum is various; sand, gravel, marl, or grit stone rock. The soil here, being the happy medium between the sterility of sand and the harshness of clay, is adapted to either tillage or pasture. The meadow and grazing land is covered with a good herbage, and the corn crops have a promising appearance; and upon the whole this District may be called a fine country.

Betley was formerly ranked amongst the market-towns of the county, but has now lost that honour, its market having declined. It is a neat little town, ornamented by two handsome

some seats; the one belonging to Mr. TOLLET, and the other to Mr. FLETCHER. There is a road through it from Newcastle to Nantwich and Chester.

Between Betley and Newcastle is a good deal of light land, light enough for turnips, and some few small closes were under preparation for that vegetable; but I think in too small a proportion. South of the road leading from Betley to Newcastle, a stronger soil, or friable clayey or marly loam, commences and continues with some variations to Eccleshall, and farther; the understrata being generally marl or rock, with some exceptions, principally on rising ground, where the surface is often lighter, and the understrata are sand, gravel, or sandy rock. On waste also, or uncultivated ground, as Maer Heath, Ashley Common, &c. the surface is a thin black peat moor, and the understrata, especially of the hilly parts, sand, gravel, or sandy rock. The herbage is poor, being generally heath, gorse, whortleberries, *carex*'s, and a small proportion in patches of the grasses. The soil mends and approaches more to a friable marl nearer Eccleshall, where the upland is a rich deep red friable marly loam; excellent for wheat or any other grain. The meadows round the Bishop's palace are also generally rich, though some patches have the appearance of being morassy, and seem to want draining.

The Bishop's woods in the neighbourhood of Eccleshall are very extensive, and well stocked with timber and underwood. Since drawing up the accounts of the woodlands and plantations of the county I have received the following information respecting them from Mr. HARDING, who I believe has the management of them.

“THE extent of the woods near Eccleshall, including the Bishop's woods and Burntwood, are, I believe, about one thousand five hundred acres.

“ The system of managing them is variable. Some parts of
 “ the Bishop’s woods are cut at fourteen years growth for
 “ crate rods and heads for the potters use, others at seven years
 “ growth for rods only. The timber trees are mostly oak, and
 “ left as near an equal distance as can be, from forty to eighty
 “ on an acre. The soil being very poor in most parts of these
 “ woods, the oaks are slow in growth. This soil is in general
 “ of the gravel or grey sandy kind, and would not be worth
 “ more than eight shillings per acre if in cultivation. The
 “ value to the owner is more in their present state than if in
 “ cultivation ; the employment to the labourer of greater con-
 “ sequence, being in the winter season ; and the benefit to the
 “ public much greater ; for without a supply of wood from these
 “ coppices the potters would experience a want of wood for
 “ the purpose of making crates to pack their ware in.

“ The best part of the wood, such as willow, alder, birch, or
 “ ash that is clear, is made use of for the purpose of hay rakes,
 “ scythe poles, mop stails, and other articles for the brush-
 “ makers use. In the low parts of the woods, where the soil is
 “ of a better nature, the underwood will pay fifteen shillings
 “ per acre annually, if it is well stooled, and attention paid to
 “ planting the spaces between the stools.

“ Ashley Heath, July 5, 1794. THOMAS HARDING.”

Between Eccleshall and Stafford, about a mile south of the
 road, is Latford Pool. This Pool, quite neglected, and
 without being of the least use, keeps back the water so as to
 render upwards of one hundred acres of land a perfect morass,
 incapable of producing any useful herbage ; a large propor-
 tion of which morassy land is the property of the Chillington
 family. The draining is, I understand, in agitation, and
 should by no means be neglected, as the land might be con-
 verted to useful meadow, and in its present state is a national loss.

The water and damaged land are, I understand, different properties. This accounts for the neglected state of the land, which the owner has no means of draining without drawing down the Pool. The strong marly upland, with some variations, continues from hence southward as far as Blimhill and part of Breewood parish. The nature of soil in the midland part of the county is explained in the Map.

The southern part of the county having some peculiarities, they are attempted to be delineated in the following short remarks made on the particular spots, in a tour through that division of the county.

Rowley Regis. This parish exhibits a very striking singularity, being in itself distinct from any other district in the neighbourhood or in the county. It is principally composed of an insulated mountain, ending or finishing in various peaks, pikes, or summits. The highest summit, called Turner's hill, is the highest ground in the south of Staffordshire, but much beneath the Moorland hills, or the Wrekin and Clay hills of Shropshire. The other highest points of Rowley mountain are Oakham and Corney hills. This mountain has for its basis a singular species of quartzose stone, devoid of any grit quality, called Rowley rag-stone; large quantities of which are carried to Birmingham and elsewhere for pavements and repairing roads. It is extremely hard, too much so to be hewn by a common tool; the colour is a rusty blue. This stone is totally void of any calcareous quality, but very probably containing a small proportion of iron. This stone lies in an infinite number of fragments, and some of them of immense bulk, both above, upon, and beneath the surface. The rock called Rowley hail-stone is of this quality, and of great size. DOCTOR PLOTT has most absurdly expressed a doubt whether this may not have been a production of art. It is evidently the

work of nature. The Rowley stone when dug for lies in no strata, but in rude heaps in every direction, generally beneath the surface soil, but often rising above it, with innumerable fragments both upon the lands and roads. The hills north of Rowley, near Dudley and Sedgely, are composed of lime-stone; whilst those of Clent, to the south, may be termed a stone brash, or innumerable small fragments of broken rock stone, intermixed with a red sand or sandy loam: whilst Rowley, as it were insulated, differs from both; the surface-soil a strong marly loam, retentive of moisture even in its elevated situation, and producing a good herbage of grass. The roads of this parish are rocky precipices, and most of the heavy carriage done on the backs of horses.

The *Hills of Clent* are, at and near their summits, composed of a light soil intermixed with small broken fragments of rock. The lower ground is of a better staple, as containing more of a marly or loamy quality. The stone brash quality goes apparently to a great depth, rendering the soil porous, and passing the rains through quick, which renders this soil liable to burn in hot summers, except where the moisture is retained by the marly loam abounding in the surface soil. A considerable part of these hills are nothing but sheep walk, totally unimproved, but covered with a fine turfed herbage, intermixed with little rubbish, except here and there a furze or gorze bush. These hill summits are very high ground, nearly equalling those of Rowley; they seem for the greatest part capable of the turnip and barley culture. This part of the county has several extensive commons. On one near the Stewponey I examined the herbage, and found it principally heath, fern, sheeps fescues, mattgrafs, white galium, and sheep sorrel.

Kinver is a light gravelly soil, on a grit rock bottom, of various quality, from fertility to sterility. On Kinver Edge

is an old extensive military work or encampment, now occupied by sheep. Kinver is still in an unimproved state; though inclosed and appropriated, but not subdivided. Of a considerable tract inclosed in this neighbourhood some years back, part is improved and part not, but some progress is making: the soil being sterile, the improvement, to render it fertile, must be a work of time. West of Kinver, and south of Enville, the soil changes into a strong clayey or marly loam, more or less harsh or friable, under which description is included the whole of Over-Areley, and part of Enville and Bobbington. The hills are often rocky, with small fragments upon and near the surface, in some parts quartzose, in others gritty. The surface soil varies in colour from red to grey, with all the shades of colour between. The cultivation the same as in other strong soils. This parish has formerly been famous for fruit, especially apples; but the orchards have been suffered to decline, though some recent attempts have been making towards reinstating them, and the soil and aspect are doubtless well adapted for the purpose.

At Sir EDWARD LITTLETON'S, at Teddesley Park, I observed a practice forgot to be named in its proper order, and in my opinion almost peculiar to the place. Although several hundred acres of land are kept in hand, yet almost the whole being kept in turf, little or no grain of any kind is grown; to supply therefore the deficiency of straw for litter, large quantities of fern are collected, of which one or more large stacks are formed every year; considerable breadths of the common being mown for that purpose.

PRICE OF PROVISIONS AND OTHER LANDED PRODUCE.

THE price of provisions in this county has been in many instances very fluctuating, and their rise and fall seem owing to a combination of different causes ; to the plenty or scarcity ; import or export : to the plenty or scarcity also of money. Since I have been in the farming business, which is about fifteen years, I have known wheat at all prices, from four shillings to ten shillings and sixpence ; barley from two shillings to seven shillings ; and oats from one shilling and sixpence to four shillings and sixpence, and this for actual consumption ; but it must be observed that our bushel is nine gallons and a half. Butchers meat has varied considerably in that period. Pork or bacon hogs, sinking the offal, have sold from two-pence halfpenny to four-pence halfpenny per pound ; cows, calves, and sheep, from three-pence to five-pence halfpenny. The price is at present high, but has by no means been gradually and regularly rising, but very often fluctuating. The price of butchers meat has been generally more steady than that of corn. The following are nearly the present prices.

Wheat, eight shillings and six-pence the bushel.

Barley, last malting season, from five shillings and sixpence to six shillings and sixpence, but expected to be much cheaper the ensuing.

Oats, at present three shillings and sixpence to four shillings. The bushel for all grain here, except malt, contains nine gallons and a half.

Beef and mutton, three-pence halfpenny to four-pence half-

penny per pound, from Midsummer to Christmas ; and four-pence to five-pence from Christmas to Midsummer.

Lamb, four-pence to eight-pence.

Veal, three-pence to five-pence per pound.

Dry bacon, six-pence to seven-pence whole sides, and one penny more by retail.

Pork, in winter four-pence to five-pence: none sold in summer.

Cheese, forty shillings to forty-five shillings per hundred, of one hundred and twenty pounds; and four-pence halfpenny to five-pence per pound by retail.

Butter, ten-pence to one shilling per pound, of eighteen ounces.

		<i>s.</i>	<i>s. d.</i>
Oak-timber, per foot	- . -	1 to	2 6
Ash ditto	- -	9 to	1 6
Elm ditto	- -	9 to	1 6

The other sorts, as beech, sycamore, poplar, and the different sorts of fir, according to quality and demand, plenty, scarcity, and other local circumstances of time and place; varying from eight-pence or nine-pence to one shilling and six-pence, or two shillings per foot.

WEIGHTS AND MEASURES.

THE customary weights and measures of this country differ considerably from the regular standard; the custom of Wolverhampton market being eighteen ounces to the pound of butter; one hundred and twenty pounds to the hundred of cheese; nine gallons and a half to the bushel of barley, oats, beans,

beans, and pease ; and seventy-two pounds to the bushel of wheat : whilst that of other markets in the county varies, some being more and some less. Malt is generally, through the county, sold by the Winchester bushel of eight gallons, and wheat-flour by the stone of fourteen pounds. Much complaint has been made of this variation, and much has been said about a regulation of weights and measures, and obliging every person to sell by the statute or standard weight or measure ; but I cannot think it a matter of much importance, particularly in the wholesale way : for in every contract of any magnitude, the parties will always understand each other. And although malt may be sold out by a less measure than barley may have been bought in, yet the competition between different maltsters will render justice to the consumer. In cases of retail, let the magistrate do his duty, by protecting the poor from fraud : the wholesale dealer needs not his protection, he will take care of himself : and the public are best served by a competition between different dealers ; who, the more numerous they are, the less danger will arise to the public of monopoly or combination.

A LIST OF PLANTS, TREES, OR SHRUBS, NATIVES OF THIS COUNTY, REMARKABLE FOR BEAUTY OR USE, OR FOR THEIR MEDICINAL, POISONOUS, OR OTHER SINGULAR QUALITIES. THE DIETETIC, OR AGRICULTURAL PLANTS HAVING BEEN MOSTLY NOTICED BEFORE.

1. PRIVET (*ligustrum vulgaris*) ; common in hedges on this farm ; makes an excellent garden-fence, when cropped.

2. Brook

2. Brook lime (*veronica beccabunga*); a wholesome, but pungent spring salad: common in streams.

3. Valerian (*valeriana officinalis*); common in moist ground.

4. Flag (*iris pseud-acorus*); in moist situations.

5. Reed (*crundo phragmites*); in rivers, ponds, and lakes, common.

6. Wild teasel (*dipsacus sylvestris*); near Tamworth, common.

7. Dog-wood (*cornus sanguinea*); in hedges common.

8. Scorpion-grass (*myosotis scorpioides*); hedges and fields, very common.

9. Viper-grass (*echium vulgare*); a showy flower, very common.

10. Buckbean (*menyanthes nymphoides & trifoliata*); in pits common: a beautiful flower; the leaves of the latter extremely bitter, and two ounces said to supply the place of a pound of hops.

11. Feather-foil (*littorale palustre*); in watery places between Lichfield and Barton by the road-side; a beautiful flower.

12. Pimpernel (*anagallis arvensis*); corn-fields, common.

13. Bell-flower (*campanula*); hedge-sides.

14. Honey-suckle (*lonicera periclymenum*); hedges, common.

15. Mullein (*verbascum*), several sorts; hedge-sides.

16. Henbane (*hyoscyamus niger*); amongst rubbish and road-sides.

17. Dwaile, or deadly night-shade (*atropa belladonna*); amongst the lime-works of Sedgeley and Dudley, very common: one of our most poisonous plants.

18. Woody night-shade (*solanum dulcamara*); in pits and hedges.

19. Centory

19. Centory (*chironia centaurium*); extremely bitter; in pastures.

20. Buckthorn (*rhamnus catharticus*); in hedges.

21. Smooth buckthorn (*rhamnus frangula*); in hedges on this farm.

22. Gooseberry (*ribes grossularia*). Mr. SNEYD of Belmont, near Leek, has discovered this shrub in the Moorlands of the *dioica* kind; that is, unfertile, unless male and female plants grow near each other; of which he showed me specimens transplanted into his garden.

23. Periwinkle (*vinca minor*); in hedges; also the (*vinca major*).

24. English mercury (*chenopodium bonus Henricus*); on roadsides: a good dietetic plant, worthy of cultivation, little inferior to spinach.

25. White, green, and maple-leaved goosefoot (*chenopodiums alba, viride, & hybridum*); common garden weeds.

26. Sanicle (*sanicula Europæa*); hedge-sides, near Betley, and elsewhere: slightly bitter, aromatic, and astringent.

27. Pignut (*bunium flexuosum*); pastures, orchards, &c. The roots would be an agreeable addition to our winter desserts. (WITHERING).

28. Hemlock (*conium maculatum*); in hedges common: a plant of active poisonous qualities.

29. Angelica (*angelica sylvestris*); in moist woods and hedges, common; warm, acrid, bitter, and aromatic. (WITHERING).

30. Water parsnip (*scium angustifolium*); common in streams: a plant of active properties, that ought to be inquired into. (WITHERING).

31. Fools parsley, or lesser hemlock (*aethusa cynapium*); common in gardens, and much resembling parsley, for which

it is sometimes mistaken: "when eaten it occasions sickness." (WITHERING).

32. Wild chervil (*chærophyllox tenuifolium*); common in hedges.

33. Ground ash (*ægeopodium podagraris*); in some hedges and orchards in great abundance: the leaves may be eaten early in the spring as a pot-herb.

34. Marsh-elder (*viburnum opulus*); a handsome shrub; common in hedges. The guelder-rose is a variety of it.

35. White-berried elder (*sambucus fructu-alba*); at Corn-bridge, near Rochester; also near the farm-house occupied by Mr. HORDERN, Effington, near Wolverhampton.

36. Purging flax (*linum catharticum*); in pastures on this farm: an infusion of two drams or more of the dried plant is an excellent purge. (WITHERING).

37. Snow-drop (*galanthus nivalis*); in orchards; a beautiful early flower, of welcome appearance, as foretelling the approach of spring.—Fair maids of February. (WITHERING).

38. English hyacinth or harebell (*hyacinthus non scriptus*); hedges very common: the fresh roots are poisonous, and may be converted into starch. (WITHERING).

39. Myrtle flag (*acorus calamus*); banks of rivers, near the river at Tamworth, at the bottom of Mr. OLDERSHAW'S garden: the root powdered might supply the place of our foreign spices; it is our only native true aromatic plant. (LINNÆUS).

40. Barberry (*berberis vulgaris*); in hedges. This shrub is said to have the quality of blighting the ears of wheat, even to the distance of three or four hundred yards across a field. The leaves and berries are gratefully acid.

41. Water plantain (*alisma plantago*); growing in water; common.

42. Willow

42. Willow herbs (*epilobium hirsutum* & *angustifolium*) ; a beautiful showy flower, growing in hedges and moist ditches on this farm and elsewhere.

43. Knot-grass (*polygonum aviculare*) ; road-sides, paths, and corn-fields, common. This plant and several others of the same species are very productive in seeds, which seem peculiarly the food of small birds, and intended by a bountiful Providence as a principal article in the support of that beautiful part of the animated creation.

44. Herb Paris (*paris quadrifolia*) ; hedge-side, in a meadow on this farm in plenty. The roots will vomit as well as ippecacuanha, but must be given in a double quantity. (LINNÆUS in WITHERING).

45. Moschatel (*adoxa moschatellina*) ; ditch banks on this farm, very early in the spring.

46. Stitch wort (*stellaria holstæa*) ; hedge-sides, early in the spring.

47. Stone crops (*sedums telephium* & *acre*) ; even the former growing on roofs in the Moorlands, particularly at Wetton ; the latter on mountains in the Moorlands, and roofs elsewhere.

48. Wood sorrel (*oxalis acetosella*) ; woods and hedge-banks : the juice is gratefully acid, and a conserve is made from it.

49. Lychnis's of sorts, particularly the (*lychnis fls cuculi*) or cuckow flower, a ragged red flower in meadows ; and the red and white wild campion in hedges (*lychnis dioica*).

50. Spurry (*spargula arvensis* & *nodosa*) ; common on this farm on some poor arable land when in tillage ; very prolific in seeds, which are eaten by small birds.

51. Agrimony (*agrimonia eupatoria*) ; hedge-sides common.

52. Dyer's weed (*reseda luteola*); in the lime-works at Dudley, and at Hayhead in plenty. This plant is used in dyeing.

53. Spurges (*euphorbias exigua* & *helioscopia*), devil's milk; in gardens and corn-fields common.

54. House-leek (*sempervivum tectorum*); on roofs and old walls.

55. Prunus's, the bird-cherry (*prunus padus*), is a beautiful flowering shrub, growing in a hedge on this farm; also on Bushbury-Hall farm, about Shelford near Walsall, and in the Moorlands: the sloe and bullace (*prunus spinosa* & *insititia*) are very common in hedges.

56. Hawthorn. The common white hawthorn is well known every-where; but the wild service (*crataegus torminalis*) is a rare shrub, worthy a place in pleasure-grounds: it grows spontaneously in a hedge upon this farm.

57. Crab-tree (*pyrus malus*); in hedges. The acid juice, called verjuice, is a good astringent or repellent, and used in strains. With a proper addition of sugar a grateful liquor may be made of it, little inferior to old hock. (WITHERING).

58. Rose, sweet briar (*rosa rugifolia*), and dog-rose (*rosa canina*); in hedges: the leaves are a good substitute for tea.

59. Bramble, including the raspberry (*rubus idæus*), and the blackberry (*rubus fruticosus*); in hedges and woods.

60. Strawberry (*fragaria*); in hedge-banks and woods. Mr. SNEYD of Belmont, has a species of strawberry, which he is certain is a *disica* plant; that is, unfertile without both male and female plants; but, I believe, not a native.

61. Herb bennet (*geum urbanum*); woods and hedges.

62. Celandine (*chelidonium majus*); in hedges. The juice is very acrimonious, and will cure warts and the itch. (WITHERING).

63. Water lily (*nymphaea lutea* & *alba*); in rivers.

64. Bugle

64. Bugle (*ajuga reptans*); in pastures: the roots are astringent.

65. Wood sage (*teucrium scorodonia*); ditch-banks and thickets.

66. Betony (*betonica officinalis*); woods and shady places.

67. Woundwort (*fluchys sylvatica*); in hedges.

68. Wild thyme (*thymus serpyllum*); heaths and road-sides, in the south part of the county.

69. Snapdragons (*antirrhinums majus & linaria*); the former a beautiful flower, abounding on the walls of Rushall Castle, near Walsall; the latter common in hedges, called toad-flax. WITHERING says of the latter, an infusion of the leaves is diuretic and purgative: the expressed juice mixed with milk is a poison to flies.

70. Figworts (*scrophularia aquatica & nodosa*); moist places. WITHERING says, swine that have the scab are cured by washing with a decoction of the leaves.

71. Fox-glove (*digitalis purpurea*); a showy plant; very common.

72. Whitlow-grass (*draba verna*); walls and dry pastures: a diminutive plant, very early in the spring in flower.

73. Water-cress (*sisymbrium nasturtium*); springs and rivulets: an early and wholesome spring salad; antiscorbutic and stomachic.

74. Hedge-mustards (*erisimums officinale & alliaria*).

75. Gilliflower (*cheiranthus chiri*); on old walls.

76. Geraniums, various sorts in pastures.

77. Mallow (*malva sylvestris*); road-sides and hedges.

78. Tree mallow (*lavatera arborea*); road-sides.

79. Dyer's broom (*genista tinctoria*); in some pastures.

80. Creeping restharrow (*ononis repens*); road-side near Himley: the other restharrow was named before.

81. Melilot (*trifolium melilotis officinalis*). This plant is not

very common in this county, but I have seen specimens of it, particularly in Stafford Field, and between there and Eccleshall. I have sometimes wondered that it has been taken so little notice of as an agricultural plant, being the most luxuriant of all our trefoils, and the most tenacious of growth. Horses are extremely fond of it (this I have often remarked). Cows, sheep, and swine eat it. LINNÆUS calls it an annual plant, HUDSON a biennial, and BERKENHOUT a perennial. In some parts of the counties of Rutland and Bedford, particularly the former, it is so abundant amongst wheat, and other grain, that I have been assured on the spot, the drawing it out as a weed, has frequently cost five or six shillings per acre. Hence I should suppose it a perennial. This circumstance may perhaps be a sufficient warning against introducing it upon arable land: yet a plant so tenacious of growth, and acceptable to cattle, may possibly be a good addition to our meadow and pasture herbage.

82. St. John's wort (*hypericum*) ; a beautiful flower ; hedges.

83. Hemp-weed (*eupatorium cannabinum*) ; in moist ditches.

84. Tansey (*tanacetum vulgare*) ; road-sides and banks of rivers.

85. Wormwood (*artemisia*) ; road-sides and rocky places.

86. Feverfew (*matricaria parthenium*) ; hedges and walls.

87. Chamomile (*anthemis nobilis*) ; on old trodden turf.

88. Violet (*viola odorata*) ; ditch-banks.

89. Pansy (*viola tricolor*) ; in corn-fields.

90. Cows and calves (*arum maculatum*) ; ditch-banks.

91. Cat's-tail (*typha latifolia*) ; ponds and rivers.

92. Burweed (*sparganium erectum*) ; ditches and moist ground.

93. Hop

93. Hop (*humulus lupulus*); hedges at Whittington and elsewhere.

94. Black bryony (*tamus communis*); hedges and thickets.

95. Common bryony, wild vine (*bryonia dioica*); hedges near Lichfield.

96. Cross wort (*valantia cruciata*); baulks by hedge-sides.

97. Pellitory of the wall (*parietaria officinalis*); on old walls, on the gateway leading to Lichfield minster.

98. Burdock (*arctium lappa*); road-sides and rubbish.

99. Clubb-moss (*lycopodium clavatum*); on Cannock Heath.

100. Stinking morel, or polecat (*phallus impudicus*); in thickets.

The above are our most remarkable native plants, so far as comes under my observation; besides those mentioned before as agricultural plants or weeds: many of the more common and well-known ones are omitted, and perhaps some worthy of notice may have been overlooked.

STAFFORDSHIRE COMMERCIAL ACCOUNT:
OR, A SKETCH OF THE COMMERCIAL STATE
OF THE COUNTY OF STAFFORD, UNDER
THE FOLLOWING HEADS: 1. MANUFACTURES. 2. MINES. 3. CONVENIENCES FOR
CONVEYANCE UPON CANALS AND
ROADS.

1. MANUFACTURES. The manufactures of Staffordshire are very considerable, and comprehend a variety of articles,

articles, particularly hardware, nails, toys, japanned goods, and potter's ware; also productions in cotton, silk, leather, woollen, linen, and many other articles.

The manufacture of hardware is carried on in the south part of the county to a great extent; and Wolverhampton, and its neighbouring populous villages, produce locks of every kind, and of the very best quality: and this may be termed the staple manufacture of this town. Buckles are also manufactured here, and a great number of hands employed upon that article. In some particulars of steel-toys, especially watch-chains, they have long been famous for exceeding every other place, and still stand unrivalled: but this manufacture in particular, and the others in general, have suffered much by the war, orders having been wanting and remittances precarious. The manufacture of edge-tools, files, augers, and japanned goods here is considerably extensive, as well as that of a great many other articles.

The staple manufacture of Walsall may be said to be shoe-buckles and chapes, in which a great number of hands are employed, and some good fortunes have been made. Also this town and neighbourhood, particularly Bloxwich, is famous for the manufacture of saddlers ironmongery, such as bridle-bits, stirrups, spurs, &c. These are sold to the saddlers ironmongers at Walsall, and form the basis of a considerable traffic, carried on to great advantage, and by them circulated to every part of the kingdom, as I have been informed by Mr. CURTIS of Walsall.

The manufacture of nails in Staffordshire is very extensive, employing many thousands of hands in some of the most populous country parishes, particularly Sedgeley, Rowley, Westbromwich, Smethwich, Wombourne, Pelfall, the Foreign of Walsall, and many other places. A great number of women and children, as well as men, are employed in
making

making the finer and lighter sorts, which they do equally well. The manufactures of Mr. BOLTON at Handsworth are in this county, and very considerable, employing many hundreds of hands, chiefly, I believe, in various kinds of toys, and in the machinery for steam engines. Bilstone furnishes a variety of plated, lackered, japanned, and even enamelled goods. Wednesbury, I believe, does something in the gun trade. Tobacco and snuff-boxes of iron or steel, and finished in various ways, are got up at Darlaston, Willenhall, and in their neighbourhood. Most of these manufactures have suffered more or less by the war ; though I understand, the trades of nails and saddlers ironmongery are pretty good ; buckles and locks indifferent ; and the steel-toy trade almost annihilated. These manufactures suffered a similar, or perhaps greater depression in the American war ; but were extremely and uniformly flourishing during the peace, from the conclusion of the American war to the commencement of the present. This is a sufficient proof that their flourishing state is consistent only with a state of peace.

The manufacture of potter's ware in the north of the county is very extensive and important, the value of the manufactured article being, as it were, a creation of the manufacturer, from a raw material of no value.

The Potteries consist of a number of scattered villages, occupying an extent of about ten miles ; and may contain about twenty thousand inhabitants, including those who depend upon them for employment and subsistence. They have not been so flourishing since the war.

Stafford, the county town, has a very considerable manufacture of shoes, both for home consumption and exportation ; and the tanning and other different branches of the leather trade, and also the manufacture of hats, are carried on upon a large scale in many other towns in the county.

The cotton manufactures of this county are not inconsiderable: those of Mr. ARKWRIGHT at Rocester, and elsewhere near the Dove, are upon a large scale, and employ a great number of hands; and those of Messrs. PEELE and WILKES, at Fazely and Tamworth, are very considerable; besides which there are extensive cotton works at Burton and Tutbury. This manufacture has a great tendency to promote our national industry, by finding employment suitable to both sexes in early youth, and thus initiating them in early habits of industry. The country is much obliged to those gentlemen by whose exertions and perseverance this manufacture has been introduced and established.

Leek has a considerable manufacture in the silk and mohair way; the manufactured goods from which are, sewing-silks, twist, buttons, ribbons, silk-ferrets, shawls and silk-handkerchiefs. In these manufactures, as by information from Messrs. SLEIGH and ALSOP, and PHILIPS and FORD, manufacturers, and others, are employed about two thousand inhabitants of the town, and one thousand of the adjacent country. In this trade some good fortunes have been made, and it has been very flourishing; but the check on paper credit, which in a great measure hurt the confidence of all connections, diminished the trade here: and the war must in some degree have damped the demand for it abroad: yet the trade is now in a flourishing state, and considerably better than it was some months ago.

Cheadle and Teyn have a considerable manufacture of tape, which finds employment for the industry of its inhabitants.

The woollen manufactory within this county is not very considerable, and a large proportion of the raw wool grown therein is sold into the cloathing and stocking countries; yet there are wool-combers in most of the towns, and some which push a considerable business; and a good deal of woollen cloth

is got up in the country by private families, though in less quantity than formerly.

There is no considerable public manufacture of linen, but a good deal of hurden, hempen, and flaxen cloth got up in private families; a great many people resident in the country being now, and having long been, in the habit of growing a patch of hemp and flax, which is generally manufactured within the county.

Of the population of Staffordshire, I suppose one third are supported by agricultural or other professions or employments thereon depending, and two thirds by manufactures, commerce, and mines.

With respect to the effects of extensive manufactures on agriculture, I believe there can exist but one rational opinion, and which must be, that those effects are of the most advantageous kind, and that in every instance the value of landed property will most rapidly rise, as the demand for and facility of disposing of its products is increased; and with this opinion agrees every remark I have received upon the 28th Query proposed by the BOARD, and which refers to this particular subject. The only inconveniences that can possibly be complained of are, first, an advance in the price of labour, which is always highest in manufacturing countries; and, secondly, an increase in poor's rates, which must always be highest in populous countries. These inconveniences are abundantly compensated for by an increasing consumption of landed produce, and a brisk demand for such produce at market.

MINES. The mines of this county are valuable and extensive, and in some articles may fairly be pronounced inexhaustible. The coal land of Staffordshire, which has been proved such, and where the existence of that mineral near enough the surface to be easily raised, has been ascer-

lined, contains a space of about 50,000 acres: of this space the quantity exhausted by consumption, from the earliest times to the present day, does not exceed a tenth of the whole; and though the scarcity and advance in price of this article have been complained of, the scarcity of it has been owing to local causes; and the advance in price has perhaps been no more than a just proportion to the advance in the price of labour, and the machinery necessary in the trade. In the south of the county the coal country extends in length from Cannock Heath (including a part of that waste) to near Stourbridge, and in breadth from Wolverhampton to Walsall. In the north of the county, the neighbourhood of Newcastle and the Potteries, Lane-End, Holly-Bush, and again in the neighbourhood of Cheadle. The country producing lime-stone is still more extensive; at Sedgley and Dudley Castle Hills, Rushall and Hayhead, but above all on the north-east moorlands and banks of the upper parts of the Dove, where the greatest consumption or length of time could scarce apparently lessen the immense quantity. In this latter district are some veins of alabaster, which is also dug between Needwood Forest and Tutbury. Of freestone here are very good and extensive quarries. Bilstone affords a freestone of very fine grit, fit either for mouldings, building, or grindstones of the finer sort, for which last purpose it is excellently adapted. Gornal, near Sedgley, has also plentiful quarries of a coarser and cheaper freestone, used for the same purposes as that of Bilstone. Tixall produces an excellent and durable building freestone, which is easily raised in blocks of almost any dimension; and the same article is again found at Wrottesley, Breewood-Park, Pendeford, and a great many other places in the county.

IRON. The strata of iron ore in the neighbourhood of Wednesbury, Tipton, Bilstone, part of the parish of Sedg-

ley, and other parts of the coal country, are very extensive. These strata generally lay under a stratum of coal, and have occasioned some very considerable iron-works to be lately established on the banks of the Birmingham Canal, where the iron trade is very much increasing; and it is to be hoped the capital spirit of enterprize and exertion of our iron-masters will, in time, produce this necessary article in sufficient quantity to preclude the necessity of an importation from abroad; or at least to lessen the quantity of such importation, the balance of trade in which, is very much against this country.

In these mines of coal, lime, and iron, and in the founderies, blast-furnaces, slitting-mills, and other branches of the iron trade, great numbers of workmen are employed, and the extension of the iron-trade in particular is of great consequence to the interests of this kingdom. The extent of the iron trade in all its varieties, wrought and unwrought, for agricultural and other internal purposes, and for home consumption and exportation, under its innumerable shapes and forms, is now so very great, as to rival even that of the great staple, wool; and to make the superiority of the latter somewhat questionable; and from the abundance of iron ore and fuel with which this country abounds, the trade, particularly so far as relates to the production of the metal, is capable of being much extended; and there can be little doubt of the possibility that this country will wholly supply itself with that article.

The other minerals of the county are principally those of copper and lead, of both which considerable quantities are raised at Ecton, near Warlow, upon the estate of his Grace the DUKE OF DEVONSHIRE. Also a copper mine is worked at Mixon, within a few miles of Leek, and a lead mine near Stanton-Moor. And there are several brass

works

works in this part of the county, particularly at Whiston, Oak-Moor, and in the neighbourhood of Cheadle; and at Shirleywich, near Ingelstree, is a considerable salt-work.

CANALS. Respecting the conveniences for conveyance of heavy articles, perhaps no county in England, or even country in the universe of equal extent, is better accommodated with artificial canals. I have marked the length upon the map of the county herewith sent, of those now in hand, as well as those which have been wholly executed nearly within the last 30 years. These lands extend about 200 miles. Two or three good projects of the same kind also might still be marked out within the county. They much facilitate the conveyance of bulky and weighty articles, such as coal, limestone, and lime, iron in the ore or metal, and considerably reduce the expence of carriage. The trade in those articles has consequently been extended in a very considerable degree, and the population of the neighbourhood where those articles are produced has increased. The Writer of this is of opinion, that the very rapid extension, not only of Birmingham for the last twenty years previous to the present war, but also of the Potteries, was much promoted by canal conveyance. Similar instances are to be found elsewhere: at Tipton-Green, now a populous town, on the banks of the Birmingham Canal, at Mr. WILKINSON's extensive works at Bradley near Bilston, as well as at the works before named in a general way, and at many others. Thus these canals have been a means of considerably increasing population, by enabling the proprietors of mines of iron, coal, and lime, to extend their works, and by that means employ more people both in raising, manufacturing, and transporting the different articles. These canals cost in execution 500,000*l.* and upon the average pay 10 per cent. per annum to the proprietors; they consequently add half a million

million to the national capital, and 50,000l. per annum to its income, and are certainly a great national improvement and accommodation to a trading country.

ROADS. The roads of this county have been very much improved within the last forty years, by the introduction of toll-gates upon most of the public thoroughfares, and which, though a cause of much clamour at their first introduction, have been the means of much improving such roads; and no one now thinks any-thing of the expence of paying toll when he considers the advantage he enjoys in point of ease, safety, and expedition, in travelling or conveying goods or other articles. Many of the private roads are still in an indifferent state; and though they might be much improved by attention in the respective surveyors, and obliging the liberties to perform their statute duty, there seems in general a want of sufficient energy to effect this; and perhaps in roads much used, and where materials for their repair are at a distance, their complete repair might lay too heavy on their respective liberties, and their reparation by a tax collected at a toll-gate upon all travellers may be the most equitable way. Next to the improvement by a canal, a country is most improved by good roads; and in comparison to the different accommodation between a good and bad one, the expence of an equitable gate-toll is a very trifling object.

I shall conclude this report with just remarking the annual poor's rate expenditure of this county, from the Parliamentary inquiries made in consequence of Mr. GILBERT's attempts at reforming our code of poor laws. They were then as follows:

Sigs-

Staffordshire poor's rate, &c. annual expences from Parliamentary inquiries, 1783, 1784, and 1785.

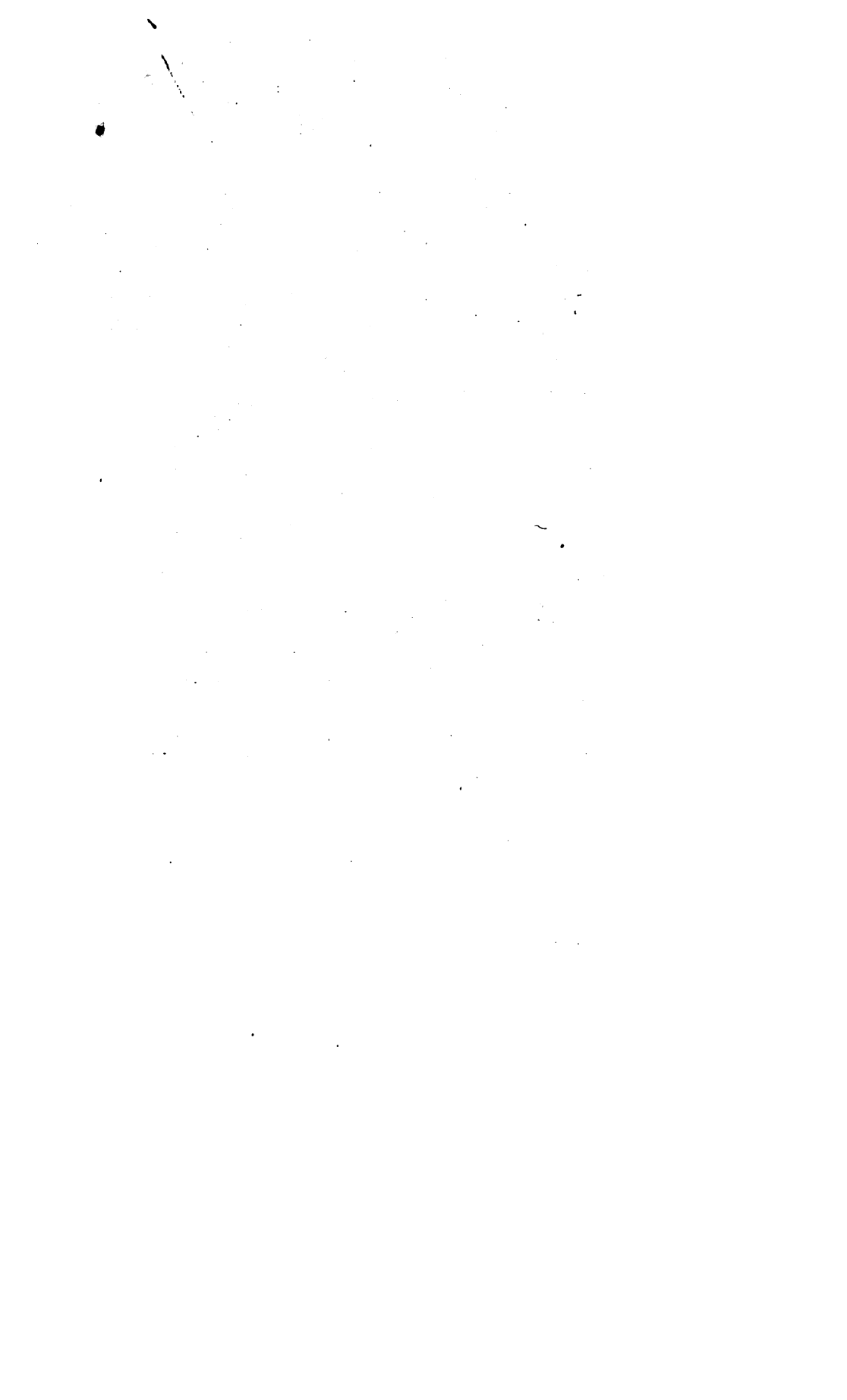
		£.	s.	d.
Whole county annual expence upon a me-				
dium of those three years	-	45,404	10	10
<hr/>				
Of this, net money paid for the poor	-	40,963	13	7
County rates, including gaols, houses of cor-				
rection, county bridges, militia, vagrants,				
&c.	-	3261	5	4
Churchwardens accounts for reparation of				
churches, &c.	-	1,179	11	11
<hr/>				
Total		45,404	10	10

A curious circumstance I remarked in some of the parishes of this county where the population is pretty well ascertained; which is, that five times the annual poor's rate expenditure in pounds, equals the population; or, that the annual poor's rate expenditure is four shillings per head upon the whole mass of inhabitants. In other places, however, the population was considerably more, than the number thus produced.

The Writer of this Report had intended to have gone in some measure into the political arithmetic of the county, such as rentals, net value of land, amount of capitals employed in trade and agriculture respectively, and had collected some data on which to found such calculations; but, upon reconsideration, conceiving it might not be very agreeable to some persons interested, for such particulars to be exposed to public view, he has declined it, and believes it improper, unless similar particulars were impartially brought forward of all the other counties.

Aug. 12, 1794.

W. PITT.



GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
NORTHAMPTON,
WITH
OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

Ed. Brit.

DRAWN UP FOR THE CONSIDERATION OF

The Board of Agriculture and Internal Improvement.

TO WHICH IS ADDED,

An APPENDIX, containing a Comparison between the ENGLISH and
SCOTCH Systems of Husbandry, as practised in the Counties of Northampton and Perth.

BY JAMES DONALDSON,
DUNDEE.

EDINBURGH:
PRINTED BY ADAM NEILL AND COMPANY.

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ADVERTISEMENT.

THE following valuable communications, respecting the present state of husbandry in the county of Northampton, and means of its improvement, drawn up for the consideration of the Board of Agriculture, is now printed, merely for the purpose of its being circulated there, in order that every person, interested in the welfare of that county, may have it in his power to examine it fully before it is published. It is therefore requested that any remark, or additional observation, which may occur to the reader, on the perusal of the following sheets, may be submitted to the Board of Agriculture, at its office in London, to whom the same shall be properly attended to; and, when the returns are completed, an account will be drawn up of the state of agriculture in Northampton-shire, from the information accumulated, which, it is believed, will be found greatly superior to any thing of the kind ever yet made public.

The Board has followed the same plan, in regard to all other counties in the united kingdom; and, it is hardly necessary to add, will be happy to give every assistance in its power to any person who may be desirous of improving his breed of cattle, sheep, &c. or of trying any useful experiment in

Surface.—The surface of this county is as peculiarly advantageous for cultivation, as it is delightful and ornamental. In no other part of the kingdom, perhaps, are more agreeable and extensive landscapes to be seen. Here, there are no dreary wastes, nor rugged and unsightly mountains, to offend the eye, or to intercept the view. The surface is no where so irregular, but it can be applied to every purpose of husbandry and tillage. Every hill is cultivated, or may be kept in a profitable state of pasturage, and every inequality in the surface contributes to its ornament and beauty.

lawns.

lawns. The various avenues of trees, extending in many parts for miles together, the rivers and streams winding along the vales, and answering the necessary purposes of machinery, agriculture and trade,—the many beautiful villages and populous towns, with their churches and lofty spires, (20 of which may be seen at a time), when viewed from an eminence, present a prospect beautifully diversified, and highly picturesque, and which cannot fail to delight the eye, and enliven the heart of every spectator.

Soil.—There is great variety in the soil of this district, and several very distinct kinds are found in almost every parish or lordship. These may be classed as follows :

1st, Strong, deep stapled soil, chiefly consisting of clay, free from any mixture of stone or gravel.

2^d, Light, thin, reddish soil, chiefly consisting of loam 6 or 8 inches deep, on a bed of stone, here called Kealy, or Scaley rock.

3^d, A rich loam of 8 or 10 inches deep, with a mixture of gravel, the under stratum being clay, mixed with small pieces of red or white stone.

4th, A thin, staple, light clay, very retentive of water.

5th, Fen and meadow land.

Climate.—The climate of this county is very favourable both to health and vegetation, and this may be accounted for from its situation and other natural advantages.

It is abundantly supplied with excellent water. The surface of the ground is no where so elevated, as to confine the foggy and unwholesome vapours (which at times arise in this and in every country) from being speedily dispersed. As there are no high hills here, it is in a great measure exempted from

deep falls of snow, and long continued rains, which are so injurious to farmers in the vicinity of mountainous regions; and as the seasons change gradually, the health of the inhabitants is little affected by them, and the operations of husbandry are seldom long or unexpectedly suspended by the inclemency of the weather.

Rivers and Waters.—There are perhaps few districts better supplied with water than this, while the inconveniencies which so often happen from enjoying that advantage, are here felt but in a very inconsiderable degree. In almost every part, it abounds with fine springs, which being very plentiful in the upper part of the county, form numerous small brooks and rivulets, several of which uniting in their course towards the sea, at length become navigable rivers.

There are five rivers which take their rise in this county, the *Nen*, *Welland*, *Ouse*, *Leam*, and *Gbarwell*; and what is very remarkable, considering the different courses which they take, the sources of the former and of the two latter are said to spring out of one hill, near Gatsby and Hellidon, in the hundred of Fawley.

The *Gbarwell*, after running for several miles along the western boundary of this county, enters Oxfordshire, and joins the Thames at the city of Oxford.

The *Leam* joins the lesser Avon near Warwick, and afterwards joining the Severn, falls into the western ocean.

The *Nen* is the most considerable of these rivers. After taking its rise, as above mentioned, it is quickly joined by a number of other small streams and brooks in the vicinity of Daventry, and continues its course from thence to Northampton, where it becomes navigable, and forms a considerable.

able river, extending its course along the east side of the county, it passes Wellingborough, Thrapston, Owndle and Peterborough, and from thence, by a new cut, (called Morton's Leam), to Wisbech, below which it discharges itself into the German Ocean.

The *Welland* takes its rise near Hawthrope, in the hundred of Rothwell, and winding along the north boundary of the county, it passes by Rockingham and Stamford, where it becomes navigable; from thence to Spalding, below which place it communicates with the sea.

The *Ouse*, which is one of the principal rivers in the kingdom, takes its rise from a spring called Ouse-well, near Brackley, in the hundred of Sutton. It quickly leaves this county, and after taking a circuitous course through part of Buckinghamshire, touches again upon it at Stoney Stratford; from whence it passes to Newport-pagnel and to Bedford; from which last place it is navigable to the sea at Lynn.

These are the most considerable rivers; but there are a great many small streams and brooks, which, after taking various windings through different parts of the county, discharge themselves into one or other of these rivers; and besides the convenience and advantage which the inhabitants enjoy from such an abundant supply of water, these rivers and streams, are not only useful for supplying the mills for grinding wheat and corn, of which there are great numbers erected upon the banks, but great advantages are also derived from the navigation of the *Nen* and the *Welland*, particularly the former, as it passes through the greatest part of the county, and by means of which the inhabitants are supplied from the ports of Lynn and Wisbech with coals, fir-timber and other articles, while considerable quantities

quantities of oak, bark, and grain are sent back in return.

TOWNS, POPULATION, AND MANUFACTURES.

This district is divided into 20 hundreds*, comprising now 316 parishes, or townships, though on the first division of the county into parishes, the number was 330; but several of them have been united of late years. The principal market-towns are Northampton, (the county-town), Peterborough, Wellingborough, Kettering, Oundle, Higham-ferrers, Towcester, Brackley, Daventry, Rockingham, Rowell or Rothwell, Weldon and Cliffe. Though it was not possible to ascertain the number of inhabitants with any great degree of correctness, yet from the information received of the population of particular parishes in different parts of the district, the number of inhabitants may be reckoned at 400 in each of the country parishes or townships, and 3000 in each of the market-towns, making in all 167,600,

C

of

* England was first divided into tithings and hundreds by year 900. The ancient tithings consisted of 10 men and their original institution, 10 of these tithings were directed to meet in order to inquire into the state of the country, such meeting hundreds. By this law, the honest inhabitants of every village swerable in their own private fortunes and property, for all crimes, and other depredations committed within their respective parishes, and to maintain peace and public order. And it is the damages sustained by individuals, in consequence of the riot happened in London in the year 1780, were levied on the principles laid down in this very ancient institution.

of which by far the greater proportion is employed in agriculture.

The principal manufactures carried on in this district, are, shoes, bone lace, and woollen stuffs, principally tammys, callimancoes, and everlastings.

In Northampton, and some of the neighbouring towns, upwards of a thousand hands are employed, in making shoes for the supply of the army and navy, and the shops in London, and also for exportation to different parts of the world. About 7000 or 8000 pairs are manufactured weekly in time of peace; but at present, (July 1794), in consequence of the war, from 10,000 to 12,000 may be manufactured in the same period. The price runs from 3 s. 6 d. to 5 s. and upwards the pair. The medium price may be reckoned at 4 s. 3 d. of which about 1 s. 6 d. is paid for labour.

The leather is purchased partly in this and the neighbouring counties, but chiefly from the London market. A journeyman earns from 7 s. to 14 s. the week; but from 9 s. to 10 s. may be considered as the general average.

In Wellingborough, and the neighbourhood, and towards the south-west corner of the county, from 9000 to 10,000 persons, mostly young women and boys, are employed in lace making. They earn from 2 d. to 1 s. 6 d. the day, generally, however, about 6 d. nearly one seventh part of which must be deducted for materials, in the proportion as 3 s. to 20 s. and consequently 17 s. in the pound of the value of the article are paid for labour. The price varies from three halfpence to 15 s. the yard; and what seems very extraordinary, rises regularly one halfpenny the yard. The greatest demand is for that quality which sells from 2 s. to 3 s. *per* yard. All the thread of which the lace is made, is imported from Flanders, and the goods, when finished, are partly exported to America, the West India islands,

and Ireland, but by far the greater proportion is used in Britain.

The woollen manufactory is principally confined to Kettering, and its neighbourhood. This manufacture was in the highest perfection it has ever attained at the beginning of the present war. A very considerable number of persons were employed, in the different branches of it, at that time. It is difficult to form any probable guess at the number; but perhaps from 5000 to 6000 would not be an extravagant calculation. At present, not more than one half of the number of persons are employed in it. The wool, in the first instance, is bought by the manufacturers of the growers, or farmers in the neighbourhood. It then undergoes a very minute assortment; and the different kinds of wool, which are found in every fleece, are appropriated to supply the proper markets, in the different parts of the kingdom where they are respectively manufactured. Thus, for instance, the coarsest, or long-stapled wool, is sent into Yorkshire, where it is made into broad cloths and flannels; the finest, or short-stapled, is reserved for the home manufactory, for the purpose of being made into tammys; and some of the most inferior of the last described wool, is likewise consumed here in making calamancoes and everlastings. After the wool is sorted, and the different kinds are assigned, to the respective purposes for which they are best adapted; that which is intended to be manufactured at home, is combed, and then delivered out, in small quantities, to the lower class of people in the neighbourhood, to be spun and reeled, for which they are paid so much *per* pound, according to the fineness of the thread into which it is converted; it is then returned home to the manufacturer, who has it wove into such kind of stuff as the quality of the thread will best answer. As soon as the goods are completed, they

are immediately sent to the London and the Yorkshire markets, where they are purchased by persons who dress and dye them, and prepare them either for the supply of their retail customers, or for exportation to foreign markets. The spinning and reeling are chiefly performed by the females, and boys from 10 to 14 years of age. The price allowed, is from 10 d. to 1 s. 6 d. *per* pound. A tolerable spinner, who is industrious, earns, upon an average, 6 d. *per* day. Sorters are paid at the rate of 6 d. *per* tod of 28 lb.; combers receive 2 s. for every 13 lb. of wool. A good hand will make 9 s. or 10 s. *per* week. A weaver from 5 s. 6 d. to 6 s. 6 d. *per* piece for tammys, consisting of 32 yards in length, by 22 inches in breadth; and for everlastings, from 5 s. to 17 s. *per* piece of the same size, according to the fineness; and a good weaver will earn 1 s. 6 d. *per* day.

STATE OF PROPERTY.

There are many very considerable estates in this district, and by far the greatest part of the landed property is in the possession of noblemen and gentlemen, who reside at least some part of the year in the county.

There are few estates, the rentals of which exceed L. 10,000 *per annum*; there are a great many others under that sum, down to L. 1000 a year, and the remainder of the property is either possessed by those whose rentals amount to from L. 500 to L. 800, or by that respectable class of men who have been long known in England under the denomination of *Yeomanry*, who either occupy their own estates, of the value of from L. 100 to L. 300,

or who, besides their own estates, rent extensive farms from the landlords in their neighbourhood.

EXTENT OF FARMS, LEASES AND RENT.

There are no very large farms in this county; for although great progress has of late years been made in inclosing the open fields, yet the lands have been in many instances parcelled and let out again to the former tenants, who occupied them in the open field state, and to such extent as it was supposed their abilities and circumstances would enable them to manage properly; so that it is only in the old inclosed parishes, where there are farms of any considerable extent; and even there, the rent of one farm seldom exceeds L. 500 a-year. In the new inclosed parishes, the farms are generally from L. 100 to L. 300 *per annum*, and in the open field lands, the rents run from L. 50 to L. 150.

This county may be said to be principally occupied (with a very few exceptions indeed) by tenants at will, the few leases that are granted are of no longer endurance than for 7, 14 or 21 years; and the general conditions contained in them are, that the tenants shall pursue a certain rotation of cropping; that they shall not break up any old pasture ground; that they shall not dispose of hay or straw off the farm; and that they shall keep the houses, buildings and fences in proper order. The terms of entry are either at Ladyday or Michaelmas, the former being the period for entering upon a grazing farm, and the latter on an arable farm. The rent is paid half yearly, and in equal portions. The first payment is usually made twelve

D months

months after the term of entry, and so on half yearly during the currency of the lease.

The average rent of the inclosed lands, which are generally exempted from tithes, may be accounted at 20s. the acre, that of the open field lands, which are subject to the payment of tithes in kind, may be reckoned at 8s. The tithes may be reckoned at from 3s. to 3s. 6d. *per* acre over the whole open field farm, including even that part of it which is annually under fallow.

MODES OF TILLAGE adopted for raising the different Species of Crops.

In every part of this district, plowing is performed by a man and a boy, with 3, 4, and sometimes 5 horses in a single length; and though the soil (as has been already observed) is of very different qualities, yet the same expensive mode of plowing, with a few exceptions, universally prevails.

Wheat.—A certain proportion of the tillage lands is regularly under wheat, perhaps about one third of the whole. It is generally sown in the open fields after fallow, but on the inclosed farms also, after beans or clover stubble. When intended to be sown on fallow, the land is first plowed late in the autumn, and a second time in the course of the summer, before which dung from the farm yard, without any earth or other mixture, at the rate of 12 or 14 cart loads *, is laid on the acre; and the third

* Dimensions of the ordinary dung cart.

Length at top,	7 feet 6 inches.
Ditto at bottom,	5 feet 9 inches.
Breadth at top,	3 feet 9 inches.
Ditto at bottom,	3 feet.
Height of sides,	2 feet.

third plowing (for more than three plowings are seldom given) takes place in the end of September or beginning of October. About 3 bushels of seed are sown on the acre, the average returns may be reckoned at 26 bushels. The species cultivated here are the Hertfordshire white, the Essex down, and the red Lammas, or common red. This mode of husbandry, however, is more peculiar to the open fields. A different mode of preparing the land for wheat is practised in the inclosed farms, where meliorating crops can be produced.

Beans and Peas are generally cultivated separately, the former in considerable quantities. They are commonly sown after wheat, though beans sometimes are sown on lands broke up from grafs. The land is once plowed, sometimes in winter, but generally early in spring, according to the season; and in the end of February, or beginning of March, seed, at the rate of 5 bushels, is sown on the acre. This crop is in general very uncertain, especially on the light lands; but may be estimated, for a course of years, and including all the various soils on which they are cultivated, at 14 bushels *per* acre, on the open fields, and 20 bushels on the old inclosed lands. The kind in use here, is the common horse-bean.

Oats.—There is but a small quantity of oats cultivated, compared with the other species of grain; not so much indeed as is sufficient for the consumption of the ordinary working cattle, which are principally fed with beans. Oats are here sown after wheat, barley, and grafs. In every case, one plowing suffices, which is generally given in the spring. And about the beginning of March, seed, at the rate of 5 or 6 bushels, is sown on the acre. The average returns may be accounted at 36 bushels *per*

acre, on the open fields, and 40 bushels on inclosed land. The species most cultivated, are what are here called the short small, and the Polish oat.

Barley is cultivated nearly in the same proportion with wheat. It is generally sown after turnip. The land is once plowed, commonly about Lady-day, and seed at the rate of from $4\frac{1}{2}$ to 5 bushels, is sown on the acre. The return may be reckoned at 34 bushels the acre. The common long-eared barley is the only kind cultivated.

Rye is seldom cultivated here as a crop, though frequently as spring food for sheep; it is generally sown after oats or barley; the land is plowed, and the seed sown immediately after harvest, and the sheep are folded upon it about Lady-day. This is considered, and justly, as a great improvement, as the rye is ready to be folded upon by the time the crop of turnip is eat off, and the sheep by this means are kept on in good order, till the beginning of the grass season. It may also be observed, that it is an additional crop gained, because the rye is eat off in such time as to give an opportunity to prepare the land for a turnip-crop; indeed, all the preparation necessary is plowing, as in consequence of the sheep folding, the field must be well manured for the succeeding crop, whatever it may be.

Rape or *Cole* is also cultivated as winter and spring food for sheep. The land is plowed three times, and generally manured before the last plowing with yard-dung. About one-eighth of a bushel of seed is sown on the acre. The time of sowing is in the month of June, or the beginning of July. The sheep are folded in the same manner as on rye or turnip, and continue till about the end of February; and if the winter is favourable, and not
very

very wet, the cole is sometimes allowed to stand for seed, when 30 bushels on an average is produced from the acre. This article varies very much in price, from L. 18 to L. 35 *per* last.

Turnips are cultivated in considerable quantities on every farm under tillage. The land is generally plowed four times; the first time, after harvest; the second time, in April; the third time, in the end of May, or the beginning of June; and the land being then manured, they begin sowing turnip in the end of June, and finish about the middle, or end of July. The seed is always sown broadcast, and very soon after the turnips appear with the rough leaf; they are handhoed, by way of thinning them, which operation is repeated once, or oftener in the course of the season, as occasion requires. The turnip-crops are always eat off by sheep, and principally by lambs; though a great number of wedders are fatted for home consumption, and for the London market, particularly about Northampton, and the higher parts of the county. The sheep are penned on the turnip-field in square folds, according to the number, about 100 commonly on an acre. These pens, or hurdles, are made of the underwood sold in the forests; they are made 2 yards long, and cost about 6 d. each.

Very few cattle are fatted on turnip here; when that is done, a few of the largest turnips are drawn from the field, and given to the cattle in the stall. They are also occasionally fed on hay, at least once or twice a-day. An ordinary crop of turnip sells at from L. 3 to L. 5 *per* acre, the price depending greatly on the season, and on the price of wool.

Potatoes are not cultivated here to any extent, the quantity necessary for the consumption of the inhabitants being very trifling, and the distance from the London market too great, to allow the farmers to send them there with advantage.

Meadows.—There is a very great extent of meadows in this district, not less than 40,000 acres. They are in general of a rich fertile nature, owing to the frequent overflowing of the waters, and possibly, no artificial means, in the present state of matters can be devised for their improvement. Indeed, the system of watering meadows, or any other kind of land, is seldom practised here; and it is but in very few instances, except along the banks of the rivers, where the lands are capable of that improvement. The most considerable track of meadow is that, on each side of the river *Nen*, beginning several miles beyond Northampton, and, extending down to Peterborough, which, from the circuitous direction, and various windings of the river, between these two points, may be supposed to pass through a country of more than 60 miles in extent.

In the few instances where artificial means have been used in watering these meadows, this mode of improvement has exceeded the most sanguine expectation of the farmer, not only in producing a quantity of grass greatly more abundant than in former years, but also in improving the quality. But unfortunately for those occupying these meadows, they are in general not only debarred from using the river, as a means of ameliorating the soil, but when extraordinary floods take place, the crops of hay are so much damaged as to be comparatively of little value. This happens in a great measure in consequence of different persons having separate and opposite interests in this river.

The persons here meant are the proprietors of the navigation, and those having right to erect mills, between whom, and those interested in the preservation of the meadows at large, many disputes arise. If an arrangement could be effected, by which a more uninterrupted course could be procured for

the river, these extensive meadows would certainly advance in value to the extent of several thousand pounds a-year. It must also be observed, that the mills are generally built in the worst possible situations; for in place of being erected on the sides of the meadows, and supplied by a *lead* or *cut* from the main body of the water, they are built on low ground, and every miller has the command of the whole river, by which means an obstinate man has it in his power, in time of flood, to injure his neighbours with impunity, and that too without, in any degree, benefiting himself.

Artificial Grasses.—The kinds of artificial grasses usually sown in this district, are broad or red clover, at the rate of 20 lb. the acre. When the lands are intended to be broken up, after one or two years, the quantity of red clover is sometimes diminished, and 4 lb. or 5 lb. of trefoil are added.

When the lands are intended to lie in grass for a number of years, the seeds sown are, 4 lb. red clover, 16 lb. white ditto, and one-half bushel rye-grass.

Saintfoin is sometimes cultivated, but not generally.

Chicory.—The only experiment made of this plant, is by Mr Martin, on his farm of Janfor Lodge, near Oundle. He has planted about 2 acres; and in the end of July it had a very promising appearance. He will, if desired, cheerfully communicate the result of this experiment to the Board of Agriculture.

HARVESTING THE CROPS.

The mode of harvesting the corns, which is universally adopted in this district, is as follows:—The

wheat is reaped with the sickle : This work is either performed by people hired for the harvest, (which generally continues about a month), or by undertakers, who reap, bind, and set it up in shocks ; for which they receive from 6 s. to 9 s. the acre, according to the bulk of the crop. And, when this operation is performed, and the wheat carried home, and put into the barns, the stubble is mowed with scythes, and raked together in heaps, which, when done by the great, or piece, costs about 2 s. the acre. The stubble is carried home to the stack-yard, and is used in thatching houses, and as litter for the cattle.

The other species of crops are all mowed by the scythe, either by men employed for the whole harvest, or at a certain price *per* acre, which varies from 1 s. 3 d. to 2 s. Oats and peas are seldom moved out of the swaths, in good weather, till ready to be carried home. Barley and beans are repeatedly turned over, before they are in a condition to be built, either in the barn, or in the stack-yard ; and when the waggons are employed in carrying home the crop, all hands, that can be spared, are engaged in raking the grounds, which is done with long headed rakes, made for the purpose. The hay harvest operations, are carried on in the same manner here, as in all other parts of the kingdom.

Having been favoured with an account, of the particular days on which harvest commenced on a farm near the centre of the county, for the last seven years, it is here subjoined.

1787.	13th	August.
1788.	4th	ditto.
1789.	18th	ditto.
1790.	16th	ditto.
1791.	8th	ditto.
1792.	13th	ditto.
1793.	1st	ditto.

MANURES.

MANURES.

Lime.—This county abounds with limestone in almost every corner, and considerable quantities are manufactured for the purposes of building, yet very little is used as a mean of improving the soil; although, where it has been properly applied, its effects have been abundantly conspicuous. One great reason why it has not come into more general use, may be owing to many injudicious experiments having been made, where the quantity used has been too small to produce any beneficial effects. There can be no doubt but lime applied in a proper manner, and, in sufficient quantities, from 300 to 400 bushels of powdered lime to the acre, would operate very powerfully on most of the soils in this district; and it is to be hoped, those proprietors who pay so laudable an attention to the improvement of their estates, and of the country at large, will make such experiments on their own farms, as will be the means of introducing the general use of this valuable manure, which has in other countries been productive of such great improvements. Lime-shells sell at from 6 d. to 7 d. the bushel at the kiln, though it might be manufactured on much lower terms, in kilns properly constructed.

Marl is not used here as a manure, though there is rich shell-marl in different parts of the county, particularly on his Grace the Duke of Buccleugh's estate of Boughton, and Sir George Robinson's estate of Cranford. The effects of this manure, in producing great crops both of corn and grass, are well known in many parts of Scotland, and it would no

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doubt operate as powerfully here, if properly applied *.

Woollen

The marl which has been discovered upon the Boughton estate, was found in a sand, rather wet situation in Boughton-park, at about 20 inches from the surface, which consists of a dark rich loamy soil; a white loamy earth presents itself, mixed with a great quantity of fine small shelly substances, which, when perfectly drained and dried, either by the sun or fire, adheres together in lumps, and becomes extremely hard. Upon immersing a piece of it in common vinegar, it causes a great effervescence. Shelly particles in a great measure dissolve, and the whole soon becomes a smooth and plaster. This stratum of white earth is from 12 to 18 inches in thickness, when a lower stratum is found, consisting of a darker coloured earth, with a large mixture of clay, and a much smaller quantity of shells than the white kind. This last stratum continues about the same depth as the former, when the strong clay makes its appearance.—The following valuable information, respecting this marl, has been given by a ingenious and learned chymist in Scotland.

I have assayed the two marls; one of them is almost white and chalky; the other, of a yellowish colour, and darker, and more plastic, like clay. The first is as rich a marl as ever I assayed. It is, when perfectly dry, very nearly equal in value to the first chalk, or the best limestones; the difference is not more than 2 or 3 *per cent.*; and it has the advantage, as a manure, of not needing to be burnt. But when newly taken up from the bed, it must contain a considerable quantity of water, and its value will be the less by this quantity of water, whatever it is. If, for example, one ton weight of the wet marl contains a quarter of a ton of water, it will be equal in value to three-fourths of a ton nearly of the best unburnt limestone. The quantity of water is easily learned, by weighing a quantity of the wet marl, and then drying it thoroughly, and lastly weighing it again.

The yellowish and more clayish marl is of little value in comparison with the former. It contains only when perfectly dry, one part of calcareous or lime earth in ten of marl; the nine parts being clay and sand. Marls, however, not richer than this, are valuable in some places that are at a distance from lime, and in using them, a greater quantity is laid on the soil, to make up for their defect in quality."

From the above chymical experiment, it appears, that the white earth contains a much greater proportion of calcareous matter, than the darker coloured. There cannot be the least doubt of both proving a very valuable manure, particularly for grass-ground; a much smaller quantity will be required for that purpose, of the former, than of the latter. It is presumed a considerable quantity of this marl might be found in the neighbourhood, but chiefly in low and moist situations. The same strata of earth here mentioned having been found, by digging in many other places, near to which this has been discovered. White earth of the same kind, has been found at the bottom of a pond in a wet part of the park, at the distance of near 300 yards from the first situation, from which

Woollen Rags are the only artificial manure used in this district to any extent. Besides, what are procured in the county, considerable quantities are purchased from Leicestershire, and the other neighbouring counties. They cost about 4 s. the hundred weight, besides 2 s. for chopping. Six hundred weight is generally applied to an acre. This kind of manure is generally used as a preparation for a crop of barley, and is found to answer well.

Compost Dungbills are seldom made, the dung being in general carried direct from the straw-yard to the field.

When composts are made, they consist of farm-yard dung, and the scourings of ditches, or soil collected on the sides of roads, together with a certain quantity of lime. The farmers who follow this practice, consider the extraordinary expence, and trouble, as fully compensated, by the benefit, which the lands receive, from the addition of the rich earth, and rotten vegetables, which are thus procured, and which operate more powerfully in consequence of the lime, with which they are mixed.

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which it is conceived, there must be a continuation of the disease described; though instances have been known where m bred, and produced, by the continual accumulation of putrid particularly in low swampy situations covered, or, surrounded by the case with the pond here mentioned.—An experiment is autumn in Boughton-park, by laying various proportions of different kinds of soil, and in different situations; the effects of which will be very willingly communicated to the Board of Agriculture be thought worthy of notice. If this kind of dressing even to equal the effects of common manure, it may prove as no doubt great improvements may be made upon meadows; such assistance can be procured. It would certainly be worth boring iron, to examine the strata of all the meadows, and low

PRESENT STATE of the COUNTY, in regard to AGRICULTURE, and, the Modes of Management.

It has already been stated, that there are 316 parishes in the district, 227 of which are in a state of inclosure, and 89 in open field; besides which, there are many thousand acres of woodlands, and a large track of rich valuable land, called the Great Peterborough Fen, in a state of commonage; so that supposing the inclosed part of the county at present under the most approved modes of management, there is above one third of the whole, by no means in the best state of cultivation of which it is susceptible.

In describing the present state of the county, it may be proper to class it under the five following divisions, *viz.* old inclosure, new inclosure, open field, commons, and woodlands; and to give a particular account of the different modes of management practised by the tenants who occupy the lands, under all these various divisions.

Old Inclosures.—Perhaps one half of the inclosed parishes, may be denominated old inclosures, at least that proportion may be said to be occupied as grazing farms, which is the use to which old inclosed lands in this county is generally applied.

STOCK and MANAGEMENT of a FARM used for BULLOCKS, and SHEEP grazing, or fatting for the Butcher.

One hundred and seventy acres old pasture, 70 acres meadow, *rel.* L. 300, poors rates, and other parochial taxes 5 s. 6 d. in the pound of rent, lands exonerated from tithes.

Soon after Ladyday, the farmer begins to purchase bullocks, and the breeds of Shropshire and Herefordshire are preferred. In the course of the summer a few Scotch and Welsh cattle are bought in. The stock never exceeds 70 bullocks and heifers. He begins selling off in September, and by the beginning of February the whole is disposed of.

From the end of October hay is given twice a day in the field. The cattle are consigned to a salesman in London.

The expence of sending them there, including the salesman's commission, amounts in summer to 6 s. 6 d. and in winter to 7 s. each. The buying-in price of Shropshire and Herefordshire cattle is from L. 13 to L. 14, and the selling price from L. 17 to L. 18. About 100 ewes with lamb (generally of the Shropshire breed) are purchased in the month of September, at about L. 21 the score. Sixty wedders of one year old, here called Shearlings, also of the same breed, are purchased about the beginning of winter. The price about L. 26 *per* score. Begin selling off the lambs (many of the ewes have two lambs) in May. The average price L. 22 the score. The ewes are sold from September to December at about the same price with the lambs. The wedders, after they are shorn, are sold in May and June, about L. 36 the score. Expence of sending to London 1 s. to 1 s. 2 d. each. A few young horses are generally reared.

SERVANTS.

1 shepherd, at 8 s. *per* week.

A man or boy, at 5 s. *per* ditto.

No work-horses or implements of husbandry.

Dairy Farm.—Extent 200 acres pasture, and 50 acres meadow. — Rent L. 280.—Tithe free.—Poor rates, &c. 3 s. Milk from 45 to 55 cows; prefers the short horned Yorkshire. Plows none of the land,

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but makes as much meadow-hay as serves for provender in winter, and on which the cows are wholly maintained during that season. Purchases straw for litter, which generally costs about 30 s. the waggon load. A few breeding mares are kept, and 5 or 6 young horses, but no young cattle. From 8 to 10 cows with calf, and fattening for the butcher. The calves are sold to Essex and other counties, where they are fed for veal. Keeps about 20 hogs in summer, and about half that number in winter. The buying-in prices from 20 s. to 25 s. They are kept 4 or 5 weeks, and fed entirely on milk. They are sold in London at from 30 s. to 40 s. each. The expence of sending there 1 s. 4 d. each. About 120 sheep are regularly kept as a breeding stock. Butter, and milk for the hogs, are the only produce of the dairy. The butter is sent twice a week to London by the stage-waggon. The price from May to November is 8 d. and from November to May 10 d. *per* pound. There is nothing particular in the manner of managing the dairy.

NUMBER OF SERVANTS.

2 men.

1 shepherd.

1 boy.

2 women.

No work-horses or implements of husbandry.

There are several farms, where a small portion of the lands are in tillage, and which properly falls to be described under this head. The mode of management, however, is so nearly similar (except in that particular) to the one before mentioned, as renders it only necessary to state, that on these farms, a breeding stock, to a certain extent, is regularly kept; and that it is principally on such farms, where attention has been paid to the improvement of the different breeds. The Dishley or new Leicester breed

of sheep, which is considered as the best yet known, is generally introduced on all these farms.

New Inclosures.—In what is called the new inclosed townships or parishes, a system of alternate corn and grass husbandry is adopted ; a certain portion of meadow is generally allotted to each farm, where it is practicable ; and some particular fields are kept in constant pasturage.

PARTICULARS of a Farm, containing 220 Acres, besides 40 Acres of Meadow.—Rent L. 400.—The Lands Tithe free,—Poors Rates, &c. 3 s. 6 d. in the Pound.

ROTATION OF CROPPING.

1st year, fallow, part turnip, the land dunged.
2d year, wheat, barley after the turnip.
3d year, beans or pease.
4th year, barley, with 18 lb. red clover to the acre.
5th year, clover.
6th year, ditto.
7th year, part beans and part oats.

NUMBER OF SERVANTS.

2 plowmen.
2 boys.
1 shepherd.
2 women servants.

STOCK.

9 horses.
2 or 3 young horses.
8 cows.
20 hogs, old and young.
A breeding stock of sheep, consisting of about 200.

PARTICULARS of a Farm, containing 200 Acres of Tillage-land, and 100 Acres in a State of Pasturage.—Rent L. 300.—Tithe free.—Poor-rates 3 s. in the Pound.

ROTATION OF CROPPING.

Oats.

Turnip.

Barley.

Wheat, with 20 lb. white clover, one-half bushel rye-grass, and 4 lb. red clover.

Grass made into hay.

Ditto, pasture.

Ditto, ditto.

Ditto, ditto.

NUMBER OF SERVANTS.

4 plowmen.

4 boys.

1 shepherd.

2 women servants.

STOCK.

13 horses.

3 or 4 young horses.

20 cows and young cattle.

A breeding stock of 200 sheep on an average.

15 hogs, old and young.

N. B. By the above rotation, fallow is excluded, one half of the farm being under corn and turnip, and the other half under grass. Though it may be proper to observe here, that no general rotation of cropping is established in the county, each landholder or his agent, fixing on that, for which the soil and situation of the farm is considered as best adapted.

Open Field Lands.—Without entering into a particular detail, of the wretched system of husbandry, universally adopted in the open field parishes in

this part of the report, it is only necessary to state simply what the system is.

PARTICULARS of a Farm in the Open Field State,
containing 100 Acres arable, 20 Acres Meadow,
and 150 Acres Ley or Pasture.—Rent, L. 118.—
Tithes payable in kind.—Poor-rates, and other
Parish-taxes, 5 s. in the Pound of Rent.

ROTATION OF CROPS.

1st year, fallow, part turnip, the land dunged or
folded with sheep.
2d year, wheat, barley after the turnip.
3d year, beans, and a few acres under oats.

SERVANTS.

2 men.
2 boys.
2 women servants.
1 shepherd takes care of all the sheep in the parish.

STOCK.

7 horses.
9 cows.
6 or 8 hogs.
130 sheep of all ages.

Commons.—Though there is not one acre of waste
lands in this county, properly so called, yet there
are many thousand acres in the open field lord-
ships in a state of common pasturage, which, under
proper management, might be made to produce
abundant crops both of corn and grafs, while at
present they do not yield pasturage, which can at the
highest computation be estimated at 5 s. the acre.
Indeed, if the calculation was fairly made, the oc-
cupiers are not benefited to the extent of half that
sum, as the stock which they send to depasture upon

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these commons, is liable to so many diseases and accidents, as one year with another, nearly counter-balances any advantages which can be derived from possessing this right ; while, on the other hand, the keeping such extensive tracks of land in a state of commonage, is attended with one very great disadvantage to the farmers in the neighbourhood, because, while these rights of commonage are continued, no attention whatever will be paid to the improvement of the breed of stock ; for it is not to be supposed, that a farmer who depends on the scanty food which these commons afford for the maintenance of his cattle, horses and sheep, will ever be at much expence or trouble for the improvement of the different breeds. Without enumerating all the various commons of small extent, situated in different parts of the county, or the nature or extent of the common rights of pasturage, possessed by those who reside in the neighbourhood of the forests and chases, it may only be necessary here to mention particularly that of

THE GREAT PETERBOROUGH FEN.

A track of fine level land, containing between six and seven thousand acres, of a soil equal to any perhaps in the kingdom of Great Britain, and susceptible of the highest cultivation. It is situated between Peterborough and Crowland, towards the north-east bounds of the county, and is subject to the depasturage of the cattle, horses and sheep of 32 parishes or townships in the neighbourhood, which comprise what is commonly called the Soke of Peterborough. The farmers who live in the townships immediately adjoining, consider their right of commonage as of no value to them ; and it may therefore be supposed, that those who live at the distance of 8 or 10 miles cannot be much benefited thereby. Indeed, considering the present mode of management,

ment, it is impossible that any advantage can arise to the persons having right therein. That it is a valuable track of land, however, if under proper cultivation, is fully ascertained from the following circumstance. The annual expence of keeping the drains, bridges, &c. in proper repair is considerable; and the means adopted by those concerned, for raising a fund for this purpose, is to let a certain number of acres to some tenant in the neighbourhood for a course of corn cropping, for 3 or 4 years, when it generally rents at from L. 3 to L. 5 *per* acre. From this account, it may be safely stated, that if these six or seven thousand acres were converted into private property, and divided into farms of a proper size, the whole might be rented on leases of moderate endurance, at from 20 s. to 30 s. *per* acre; and it may further be observed, that the produce of these lands, under that system, would exceed what they now yield, to the extent of many thousand pounds a-year, while the additional number of hands which would be requisite for the cultivation of these farms, could not be short of 1300 or 1400. The advantages, therefore, both of a public and private nature, which must necessarily result from a division of this common, are so obvious, as to require no illustration.

The person who is most materially interested, is Earl Fitzwilliam, though a great many others are, to a certain extent, concerned. From the truly respectable character of that Noble Lord, there can be no doubt, that a proper application made to him, from all those having interest in the division, would be attended with the best consequences, as, from his disposition to be serviceable to those who reside in his neighbourhood, he would chearfully embrace so favourable an opportunity of materially promoting their interest. But as the whole inhabitants of these 32 parishes, may be said to be in some degree concerned,

cerned, and as it would answer no good purpose, to call together so numerous a body of people, it might therefore be proper, that a meeting should be held in each parish, and powers granted to one of the most respectable of the inhabitants, to meet a person deputed by each of the other parishes, in order to make the application, and procure his Lordship's consent to the measure; and if obtained, of which there is no reason to doubt, application might then be made to Parliament, who would no doubt agree as to the propriety of the division, and pass a bill, appointing commissioners to negotiate the business in common form.

Among the various important objects, which naturally fall under the consideration of the Board of Agriculture, there are none, which, in their consequences, will prove more extensively beneficial in a national point of view, than their giving every possible aid to those spirited proprietors, who are anxious to promote the improvement of the country, by bringing the commons and waste lands under cultivation, as nothing will so certainly promote or maintain an increased population.

With respect to what are the best means to be pursued in regard to the common in question, it would be improper in this report to determine. It appears only necessary to repeat, that the improvement of it, would give regular employment to a great number of hands, and furnish the public markets, with an additional quantity of several thousand quarters of grain annually; all which can be effected, without being attended with any bad consequences whatever.

Woodlands. — There are several very extensive tracks of woodlands in this district; they consist either of forests, chaces, or purlieu woods. The most considerable forest is that of Rockingham, which is situated in the northern parts of the county, begin-

ning near the village of Wansford, on the great north road from London to Edinburgh, extending for near 20 miles towards the centre of the county, and forming almost a continued chain of woodland country : There are two other extensive forests, *viz.* Whittlebury and Salcey, lying towards the south border of the county ; the chaces are those of Ged-dington and Yardly ; the former in the neighbourhood of Rockingham forest, and the latter in the vicinity of Salcey forest.

The purlieu woods, are both extensive and numerous, particularly towards the lower parts of the county, and upon the borders of the forest of Rockingham ; and besides these, there are several small tracks of woodlands, very advantageously and ornamentally situated, in many other parts of the county.

The whole of what are now considered to be forest woods, are subject to the depasturage of the deer, and at a stated time of the year, to the depasturage also of the cattle belonging to those who reside in the adjoining townships, and who claim to be possessed of a right of commonage ; on these accounts, the profit arising to the proprietors of these woods, from the cutting of the timber, and underwood, is small, compared with that arising from regular well managed purlieu woods, which are not subject to the annoyance of the deer and cattle.

The underwood in the forests and chaces, principally consists of black and white thorn; ash, fallow, maple, and a small proportion of hazle. They are generally cut at from 12 to 18 years growth ; the different woods are divided into as many parts or sales, as the number of years growth at which the underwood that is cut may amount to, so that a regular rotation in cutting takes place every year.

The proprietors of the underwood in the forest woods, are empowered by the ancient laws and customs of the forest, to fence in each part or sale, as

soon as it is cut, and to keep it in *band*, as it is here termed, for 7 years, except against the deer, which are let in at the expiration of 4 years; but the cattle belonging to the commoners, are not let in till the end of 7 years from the time of cutting; so that there are always 7 parts or sales constantly in *band*, and in which the cattle of the commoners are not permitted at any time to depasture. But from the depredations to which the young underwood is subject, by so early an invasion of the deer and cattle, even at the regular and stated times before mentioned, besides the great damage frequently sustained from inattention to the repairs of the fences, during the time it should be kept in *band*; the heavy expences attending the making a new fence in the first instance, and the continual expence incurred in keeping it in repair, during the time it should stand, make the profit arising from the underwood, very inconsiderable to the proprietor, compared with any moderate rent that might be expected from the land. The forest underwood, through the whole *sale*, or part which is cut, does not in general bring above L. 4 the statute acre, though sometimes it is sold as high as L. 6 the acre upon an average of the whole sale; but this depends entirely on good management in keeping the fences in proper repair, so as to prevent the deer and cattle from breaking in before the limited periods, as well as in suffering the underwood to stand to a greater age than usual.

At the time the underwood is to be cut, it is parcelled out into small regular sized lots, generally consisting of about a statute rood of ground; the divisions of the lots are made by cutting a number of small passages or openings called trenches, which intersect each other at regular distances, and these trenches are just cut wide enough to admit of a passage between each lot; the underwood is valued and sold
standing,

standing, and the purchasers cut it and carry it away at their own expence. A considerable part of it is made into hurdles for folding sheep on turnip; the remainder is applied to other purposes, and used as firewood, there being no coals in the county, but what are brought up the rivers *Nen* and *Welland*.

A fall of oak timber* is generally made at the proper season in that part, or *sale*, in which the underwood has been cut; and this fall consists of the most unthrifty and unimproving trees, but the quantity and description of timber, must depend of course upon the state of the wood, as to the stock of timber.

It is a general custom in the forest-woods, to value and sell the trees standing. Distinct and separate valuations are generally put upon the timber, the top, and the bark respectively. And it sometimes happens, that these three articles are sold to three different purchasers; but it is more usual to sell the tree and the top together, reserving the bark, which is sold to one purchaser, previous to the fall of timber being made. The conditions and prices vary in different parts of the country; they run generally, however, at from 7 s. to 9 s. in the pound of the value of the tree.

The Prices of Timber in this District are as follow:

Oak,	from	1 s. 4 d.	to	2 s. 6 d.	<i>per</i>	foot.
Ash,	from	10 d.	to	1 s. 6 d.	<i>per</i>	ditto.
Elm,	from	9 d.	to	1 s. 4 d.	<i>per</i>	ditto.
Poplar,	from	6 d.	to	1 s.	<i>per</i>	ditto.

Every

* There is a very small quantity of the oak timber taken out of the forest in the country. It principally consists of timber of a large size for the use of the navy than for country purposes. It is therefore generally bargained, by contractors for the navy, who come into the county regularly during the season for felling the oak timber. But if no speedy and effectual care be taken for the better management and preservation of the forest woods, to insure a regular succession of oak timber, the navy will, in a short time, lose this valuable resource.

Every other kind of white wood, such as beech, chesnut, lime, &c. sell at something more than the price of fire-wood.

It is a certain truth, and well worthy of the serious consideration of Government, that the depredations committed in the extensive forests and chases in this county, by the deer and cattle, in destroying the young trees at a very early period, prevent the possibility of obtaining any considerable succession of oak-timber, as scarce any saplings or young oaks are to be seen, although there are undoubtedly a great number of seedlings produced by the falling of the acorns; yet, when the number of destructive enemies, to which they are exposed in their infancy, is considered, it is a wonder how any of them escape their devouring jaws.

If the forests in the other parts of the kingdom are under the same management, there is no man who wishes well to his country, but must be alarmed at the prospect of the deficiency, which, in process of time, must take place in regard to that valuable article, oak-timber, for the supply of the navy of this kingdom. The evil certainly requires a speedy and effectual remedy to be applied. What that may be, the wisdom of the Legislature can best determine; but, as particular attention was paid during the survey on which this report is founded, to the state of these forests and chases, compared with those woods which are private property, it may be proper to add, that the difference is obvious to the most cursory observer. In the one, a young thriving oak-tree is scarcely to be seen, whereas, in the other, a regular succession appears in every quarter. The miserable state of the Royal Forests does not originate from any want of public spirit in those who have at present the charge of them, but necessarily arises from the errors of an ancient system, which had in view more the preservation of deer than of timber;

timber; and consequently sacrificed the preservation of the latter, for the purpose of securing food for the former.

Perhaps the best plan that could be adopted, would be to disforest all these woodlands, under severe restrictions however, in regard to certain proportions of them being continued as forests for the production of oak timber. Those having right to the timber and underwood, being also bound to give a compensation in land to the commoners, having a right of commonage in these forests and chases, and according to the nature and extent of their different rights. Were some such plan adopted, certain considerable portions of these forests and chases, might be devoted solely to the purpose of growing oak-timber, and one person only having interest in them, there is no doubt proper attention would be paid, in order to bring on a regular succession of timber, which could be effected, whilst at the same time, a considerable improvement might be made in the growth and value of the underwood.*

FARM

* I am indebted to Mr EDMONDS of Boughton-house, for the following Observations, and for many others scattered in various parts

Purlicu woods are those woods which are situate immediate forest, and which, at one time, formed a part of it; but the proprietors, at some former periods, obtained grants and permission from the crown, and to consider them as their own private property, the proprietors are not bound by any of the laws and regulations to which forest-woods are subje

MANAGEMENT OF PURLIEU WOODS.

THE management of what are called purlicu woods in this country is very different from those of the chase and forest woods. These woods are not under the same management; in the course there is no obstacle to prevent the proprietors of them from taking any mode of cultivation and management in their power; but the proprietors have very few instances taken; and little improvement toward the growth and value of the woods has been made. The principal part of these woods principally consists of hazle, ash, fallow, white and red maple; it is generally cut from 11 to 14 years growth, when

FARM BUILDINGS.

In this county, as well as in the greater part of England, the farmers still live crowded together in villages,

ives, which is as soon as the leaves are completely off. That operation is performed under the direction of the owner of the woods or his agent. The part intended to be cut is parcelled out for the convenience of the purchasers into regular sized lots, consisting of 20 statute square poles each. The whole of the underwood growing upon each lot is indiscriminately cut, and laid in one direction, on the ground from which it is produced; and in some instances care is taken to select such ash poles, as are of a large size and proper to be converted to more valuable purposes, than those which are indiscriminately sold with the underwood. So soon as the operation of cutting is completed, and the wood parcelled out as above described, a valuation is put upon each lot or parcel, according to its quality, and what it may consist of; and the whole is then sold to such persons as may be inclined to purchase the respective lots or parcels, who, for and above the price of the underwood, repay the expence of cutting it, which is proportioned at so much *per* pole upon each lot according to its quantity. Such as the present mode of management is in these woods, their produce is much more considerable to the proprietor than forest or chase woods; but it is believed it is by no means equal to the produce of well cultivated woods in other parts of the kingdom. The average price of underwood, cut from 11 to 14 years growth, is about L. 6 *per* statute acre; but it is sometimes sold so high as L. 8 *per* acre.

The underwood of the purlieu woods, as well as of the other woods in this district, the management of which is exactly the same as that of the purlieu woods), is principally bought by bakers, who consume it as fuel. A considerable quantity of the smooth wood is manufactured into sheep-hurdles, which are used for temporary fencing; but in all cases, a reservation is made by the purchasers of the ash and fallow poles which are used for various useful purposes in husbandry. A fall of oak timber is usually made at that part or quarter from whence the underwood is cut; the quantity of which, of course, depends upon the state of the wood, as to a stock of timber.

The oak timber in the purlieu and private woods, on account of there being so good a succession, as well as on account of there being a great deal of underwood, seldom attains to so large a growth as that found in the forest and chase woods; it is therefore much more fit and convertible for country uses, and for all purposes of building and husbandry, and is principally bought by carpenters, joiners, wheelwrights, and other artificers in the neighbourhood.

Chase Woods.—There are two chases in the county, *viz.* Geddington and Yardly. The former was once a part of Rockingham forest; but permission was given by the

villages, or townships, as was the practice in the most remote ages, and when the system of open,

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Crown many years since, to the ancestors of the Montagu family to disforest to convert it into a chase; the latter, it is presumed, was once a part of Salcey and has been disforested likewise.

Geddington Chase, is supposed to contain about 1400 acres, of which perhaps acres are woodland, the remainder consists of lawns, plains, ridings and vistas. The whole is now the joint property of his Grace the Duke of Buccleugh, and the Honourable Earl Beaulieu, subject to a commonage at a stated time of the year from May-day to about Martinmas, for the adjoining townships. Deer are kept and it is in every respect managed like the forest woods, as to fencing out the commoners cattle from that part which is annually cut. The woodland is divided into 18 parts or sales; in one of which the underwood is cut, and a fall of timber every year. It is afterwards fenced in for 7 years, (*viz.* 4 years from the deer, from the cattle); so that there are always 14 parts out of 18 open to the forest, 11 parts out of 18 open to the latter, besides the plains, ridings and vistas, a few of which only are at any time included within the fence of the parts which are open. Although there is at this time a valuable stock of oak timber in this chase, principally consisting of trees of a large size, and which have been the growth of ages; perhaps this extensive and valuable track of woodland exhibits at this moment a striking and lamentable instance of the evil and pernicious consequences that inevitably attend property circumstanced as the forest and chase woods are. The depredations and ravages committed by the deer and cattle upon the young sprigs and coppice at so early an age, not only prevent even the smallest possibility of obtaining a succession of oak timber, but cause a daily diminution in the growth of the wood. The injury sustained by the deer being admitted into the young spring, in the first instance, is very considerable; but that injury is small indeed, when compared to the destructive havoc made by the devouring jaws of a herd of hungry cattle admitted into the young coppice just as the leaves have begun to appear, and in the season of the year when it some times happens they have just survived a famine, the consequence of a want of sufficient fodder, in a hard and severe winter. In the townships using a commonage in these woods (except one) are in an open state, and no attention is paid by the occupiers to the description of cattle being reared, which are of the most inferior kind, and which, in consequence of the inability of the occupier of an open field farm to procure a sufficiency of food for their cattle in the winter season, are reduced to an extreme state of leanness and poverty. At this time they are turned into the woods, when whole herds of them rush forward like a torrent, and every thing that is vegetable and within their reach, inevitably falls a sacrifice to their voracious and devouring appetite. Under these circumstances it is not surprising that contagious maladies are frequently the fatal consequence; to which

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or common field husbandry universally prevailed. Though these crowded situations might no doubt be

considerable number of cattle fall victims; and the loss sustained by the owners not deprives them of any profit or emolument from those that are fortunate enough to survive the malady, but prevents their deriving any advantage from the commonage that year, and probably for many years to come. Such are the inconveniences which must ever attend property held under a mixture of interests, so extremely inimical to each other as those of the commoner and the proprietor of the timber and underwood are, in woods of this nature. Can there, at this time, be a subject to which the attention of the Legislature ought more speedily to be directed? The great and alarming decrease of oak timber in this country is universally acknowledged and lamented by every individual; and it is presumed there is not a Briton but who must be sensible how much that invaluable article tends, at this moment, to the preservation and defence of his country, against a neighbouring nation, frantic with zeal to propagate their diabolical systems throughout the civilized world. Those who are in the habit of managing woods, no doubt feel a very sensible respect for so fine and venerable a production of nature as that of an oak tree arrived at its full perfection, both in size and growth; it is truly a living monument of the works of the Creator; and no one would direct the fatal axe to be applied to its root, without reflecting that he is about, in a few minutes, to destroy what whole ages have been employed in producing; but it would, it is conceived, be some consolation to such a person, could he discover in looking around this venerable trunk, some companions left to survive its loss, and who, in a young and thriving state, might receive additional vigour by the removal of their neighbours. But this, alas! in the present state of things, is a consolation that cannot be obtained; for it must be next to a miracle indeed, if a young oak sapling escapes the numerous enemies to which it is exposed in its infancy. And if the system now practised in these woods, with regard to cutting down all such timber trees as appear mature, in an unthriving state, is long pursued, the result must be, that in a very few years, there will not be a single oak tree large enough for the use of his Majesty's navy left standing.

It is presumed, the same facts and circumstances here stated, will apply to many thousands of acres of woodland in this county, as well as to many very considerable tracts of the same description in the kingdom. Must it not then be a serious, important, and very lamentable reflection to the mind of every man who wishes for the preservation of his country, that the Legislature do not immediately take some active and effectual measures to avert the impending evil that must otherwise inevitably take place?—Where those advantages that will attend an improved system of management in the best and chaste woods are enumerated, it will be necessary to take the liberty of suggesting the mode by which they may be attained. An inclosure of all the open field and wastes having a commonage in the woods, must undoubtedly be the first and princi-

be attended with considerable advantages in ancient times, and though the system of open field husbandry, where

pal object to be obtained. That inclosure should extend to such parts of the forest or chase woods as are situated within those parishes respectively. The act of Parliament to be obtained for the purpose, should contain proper powers for the commissioners appointed, to ascertain the value of the whole commonage in the woods, and to divide and proportion the value of that commonage among the several townships or parishes, according to the number of persons who may be found by them in each parish or township, to be entitled to any share or proportion of such commonage, and according to their respective rights and interests. The commissioners should also be empowered to set out so much land, being part of the estate which the proprietor of the woods may be possessed of in each parish or township, to every commoner, as they may judge equal in value to the proportion of the commonage to which such commoner is entitled, and which they may judge to be a full and adequate compensation to every commoner, for his right and interest in the forest or chase woods. The land so to be set out in compensation to each commoner, as aforesaid, to be added to the allotment of land which each commoner may be entitled to, in right of his estate and interest in the open fields and commons, which allotment should be laid as contiguous to the dwelling-house or homestead of the commoner as possible. It is presumed this mode of compensation may be adopted in all cases, where the proprietor of the woods is possessed of an estate in property in the open fields and commons, or of any old inclosed lands belonging to the parish or township in which the woods may be situated, to enable the commissioners to set out a sufficient part of such property as they may judge equal in value to the value of the commonage of such parish or township; but instances may occur where the proprietor of the woods may not be possessed of either of those advantages; in that case a sufficient quantity of the woodland might be grubbed up and cleared, and constitute a part of the land intended to be inclosed, and might be valued and allotted by the commissioners accordingly.

The present state in which the forest woods are held, it is feared, will nevertheless in great many instances, make it impossible for the system above prescribed to be generally adopted; the remaining interest still reserved to the Crown, with respect to the disposal of other matters in these woods, will prevent the proprietor of them from being able to accede to any measures that may be suggested for their advantage and improvement until some previous arrangement takes place. It is hoped the commissioners of the land-revenue, who, it is understood, have now these matters under consideration, will devise some means by which so formidable an impediment as a mixture of forest and chase woods must inevitably be to the improvement and advantage of landed property, may be done away, and by which the respective owners and proprietors of the forest woods may be enabled to pursue the best possible system of management in the cultivation of the same. The advantages resulting from such measures being adopted, as have been experienced in regard to the forest and chase woods, would not only be very sensibly felt by

where practised, precludes the possibility of placing the farm-houses in central situations; yet it appears surprising that the buildings belonging to the farms in a state of inclosure, should still remain at such a distance from the farms; there being but very few instances where the houses are properly situated in the centre of the farms. The inconveniences which the farmers must labour under in consequence of residing at so great a distance from their farms; and the loss of time and consequent extra-expence, of bringing the produce from the extremity of the farm to their home yard, (as it is here called), and of carrying the manure to the distant fields, are so obvious, as to require no explanation.

The farm buildings are in general as badly constructed, as they are improperly placed. It being only on such farms where the houses have been recently built, and under the direction of the landlord's steward,

ted, but would be so extensive as materially to affect the nation at to the individuals interested. Upon the deer and cattle being woods, no interior fences would be required, and the proprietor continue such parts of his property as he might think fit, in a wood-enabled to introduce such a system of management in the cultivation in wood, by means of which their produce might be ed. The remainder of the parts not continued in wood, might p, and converted to some useful purposes of agriculture. The pending upon the precarious and uncertain advantage arising to the woods, would become the possessor of a portion of land, the properly cultivated, would be a certain and valuable resource in maintenance of himself and his family. *Secondly*, In regard to the on the inclosure of the fields and commons, an improved system cultivation of the arable lands would take place, by which means corn and grain would be brought to market. The pasture land oved by the aid of meliorating crops and artificial grasses, which oducing an improved breed of cattle and sheep. And, *lastly*, all portions it might be divided, would become entire, and free s that must ever attend it when held and enjoyed by a mixture inimical to each other.

steward, where any attention has been paid either to regularity or convenience.

It is the practice for the proprietor, to furnish materials, (except straw for thatch), and the tenant to be at all the expence of other repairs. And therefore, considering the uncertainty of the tenure on which he holds them, it is no wonder that he should allow the houses to fall into a ruinous condition. Upon the whole, it is certain that the farm-houses in this district, are not kept in that tenatable state of repair, which is for the mutual interest of the landlord and tenant.

The farm-houses are built either of stone or brick, and covered with slate or straw. The barns, which are very large in proportion to the farm, owing to the practice which here prevails of housing as much of the crop as possible, are either built wholly of stone, and clay used as cement; or partly of stone wall, on which a house framed of wood (generally oak) is erected, and plastered over the sides with clay. They are commonly thatched with straw. The byres, stables, &c. are generally built of stone, and covered in the same manner, and with the same materials as the barns.

IMPLEMENTS OF HUSBANDRY.

The waggons, carts, rollers, and other implements of husbandry, are so similar to those in use in the neighbouring counties, and which have been fully described in some of these reports, particularly in that of Leicester, that it is deemed unnecessary to fill up this report, with what would have so much the appearance of repetition.

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The principal implement, the plough, is a clumsy piece of work, with a long massy beam, and an ill formed timber mould-board, better adapted as a machine for 4 or 5 horses to pull along, than for the purpose of turning over a neat clean furrow. And it cannot admit of a doubt, but that with a well constructed light plough, with a cast iron mould-board, (such as are common in many parts of England and Scotland), a man with two horses a-breast, and without a driver, would do as much work, and to better purpose, than is here done by a man and a boy, with 3, 4 or 5 horses; indeed by the practice of the county, this is clearly admitted, as a double furrow plough, of a similar construction with the other, is pretty generally used, and which does double work with the same number of horses.

LABOURERS, AND THE PRICE OF LABOUR.

As there are no large manufacturing towns situated in this district, the variations in the price of labour are not considerable; and it is, upon the whole, more moderate than could well be expected.

The wages of a ploughman by the year, are from L. 8 to L. 10, with board and washing.

A young man or boy, from L. 4 to L. 5.

A female servant, about L. 4, 10 s.

A labourer in summer, receives 1 s. 4 d. without board, and in winter 1 s.

In hay-harvest, a man earns from 9 s. to 10 s. *per* week, and a woman 4 s. without board; though each is allowed a certain quantity of beer.

In corn-harvest, a man hired by the month, receives about L. 2, 10 s. besides board; a woman is paid at the rate of 1 s. the day without board.

Wheat

Wheat is threshed at 2 s. 6 d. oats, 1 s. 4 d. barley, 1 s. 9 d. and beans, 1 s. 3 d. *per* quarter.

A carpenter by the day, has 2 s. 4 d. in summer, and 2 s. in winter.

A mason 2 s. 4 d. without board.

A blacksmith charges 5 d. for a horse-shoe.

Wrought iron, such as is used in mounting ploughs or carts, costs $4\frac{1}{2}$ d. the pound.

Inclosing land, which is here always done with ditch and hedge, costs 1 s. 6 d. the running yard, and includes the price of the quicks, casting the ditches, a double row of post and rail, and keeping the hedges clean, and the fences in repair for 5 years.

Labour commences in summer at 6 o'clock in the morning, and ceases at the same hour in the evening; during hay and corn harvest, labour begins at 5 o'clock in the morning, and ceases about 7 o'clock in the evening; and in winter, the operations of husbandry go on from day-light to dark.

A man and a boy with 3 or 4 horses, and a one furrow plough, will plow one acre in the day. This is done in what is here called one journey: In summer they are at work by 6 o'clock in the morning, and go between 7 and 8 hours without interval; after which the men are principally employed during the remainder of the day in providing food for the horses.

The maintenance of the servants is here a very expensive article to the farmer. The breakfast consists of cold meat, with cheese, bread and beer. For dinner, roast or boiled meat with pudding, and for supper the same as at breakfast; and besides ale, allowed on extraordinary occasions, they have small beer at command at all hours. The luxury in which this class of people live, accounts

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in a great measure for the necessity of levying such immense sums annually for the support of the poor in England. While it is perfectly certain, that a person living in Northumberland, or North Britain, on ordinary fare, will do fully as much work, and to as much purpose, as a Northamptonshire ploughman, who is maintained at a much greater expence.

POOR-RATES.

The poor-rates vary greatly in this district; in the country villages they run from 2 s. to 5 s. in the pound of real rent, paid by the tenant to his landlord, and in the towns much higher, particularly at Kettering, where, owing to the late decline in the woollen manufacture, they are advanced so high as 12 s. in the pound.

It might justly be deemed presumption in the writer of this Report, were he to enter fully into the discussion of a subject so complicated as that of poor-rates; in the investigation of which, so many able pens have been employed. He cannot however avoid remarking, that the evil appears to be getting to such a height, as will render it soon necessary to adopt some measures more effectual than any that have hitherto been attempted, in order to keep this heavy tax within any reasonable bounds. And what is of still more importance, to curb that spirit of licentiousness, which so generally reigns within the walls of a parish work-house, from whence shame and honest pride seem to be for ever banished.

MARKETS

MARKETS and FAIRS.

Besides the weekly markets which are held in all the principal towns, for the sale of butcher-meat, and other articles of provisions, there are several stated annual fairs for the sale of cattle, horses and sheep.

The price of provisions are as follow :

Beef and mutton, 4½d. <i>per lb.</i>	A goose, 3 s.
Lamb, 5 d. to 6 d. <i>per do.</i>	A turkey, 3 s. 6 d.
Veal, 4 d. do. do.	A duck, 1 s.
Pork, 4½ d. do. do.	A hen, 1 s. 3 d.
Butter, 8 d. to 10 d. do.	A chicken, 6 d.
Cheese, 4 d. to 5 d. do.	Eggs, 6 d. <i>per score.</i>
Bread, 1½d. do.	

The quantity of wheat and flour annually exported from this county is very great ; but it was not possible, by any means, to ascertain the amount, as the greatest proportion is transported by land-carriage. The wheat is sold by the farmers to the millers in their neighbourhood, who convert it into flour, and dispose of it in the neighbouring counties of Leicester, Nottingham, and Warwick, and great quantities are annually sent down the Nen to Wisbech. A great proportion of the barley crop is made into malt, and consumed in the county. The oats, and a great part of the beans, are consumed by the horses ; a small quantity of beans are, however, annually exported to Wisbech and other places.

Having been favoured with an account of the prices at which the bushel of wheat, barley, oats, and beans was sold on a particular farm in this district.

strict for the last six years, it is here subjoined, and may be depended upon as correct.

AVERAGE price, *per* Bushel of Wheat, Barley, Oats, and Beans, from the year 1787 to 1792 inclusive.

	1787.		1788.		1789.		1790.		1791.		1792.		General average.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Wheat,	5	5½	5	8½	6	4½	6	6½	6	3½	5	10½	6	0½
Barley,	2	6½	2	6½	2	7½	3	3	3	1½	3	4½	2	11
Oats,	2	0½	1	10½	1	8½	2	4	2	5½	2	6½	2	2
Beans,	3	7½	3	8½	3	6	3	11	3	10½	4	1½	3	9

ROADS and BRIDGES.

There are few districts which can boast of a greater number of handsome, well built stone-bridges; every brook and rivulet is made passable by means of a stone arch; and the bridges on the larger rivers do credit to the public spirit of the inhabitants.

It is to be regretted, that as much cannot be said in respect to the roads. These, it must be acknowledged, display no great ingenuity either in the engineer who planned, or in the undertakers or overseers who executed the work. The great roads leading through the county are all turnpike, and are supported, partly by the money collected at the different toll-bars, and partly by the statute-labour imposed by act of Parliament. Each tenant who occupies a farm of L. 50 of rent being bound to perform 3 days labour of a cart with 3 horses, and 2 men yearly, on the turnpike-roads within the parish, and the same on the private or parochial roads; and where there are no turnpike-roads with-

in the parish, the whole 6 days labour is applied to the repairs of the parish-roads.

From this account it might be supposed, that the roads in this district would be kept in a proper state of repair; but the contrary is the case, particularly in regard to the private or parish roads, which are in many places in a very ruinous situation, and, in general, so narrow as to admit of only one track. It is true indeed, that the country is but indifferently supplied with metal proper for road-making, the stone being very soft, and apt to grind into powder; —but it is equally true, that, in place of breaking the stone properly, and laying it on carefully to a proper depth, it is generally laid on the roads in the same state in which it is raised out of the quarry; and in place of being broke with hammers, that operation is only performed in the course of time by the cart-wheels.

In place of employing contractors who do not reside in the neighbourhood, and who, for the most part, execute the work in a very slovenly manner, it would be for the interest of all concerned, to farm both the public and parochial roads to active and intelligent farmers in the neighbourhood, who would be induced by a spirit of emulation, and a regard for character, to perform the work properly. Till some such plan as this is adopted, there is little chance that the roads in this district will be put in a proper state of repair.

LIVE STOCK.

On the first view, it will appear surprising, that, in this district, where so great a proportion of the lands are in a state of pasturage, little or no attention has been paid, till of late, to the improvement

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of the different kinds of stock ; yet, when reference is made to the manner in which the farms are occupied, as before mentioned ; and when the vicinity of the great London market is considered, it will not be thought extraordinary. Of late years, indeed, the improvement of the breed of sheep has become an object of the first importance with many of the most respectable and intelligent farmers.

Black Cattle. There are very few of this species of stock reared in this county, a few in the open field lordships excepted ; and these are so crossed and mixed with the breeds of other counties, which are often improperly chosen, and are so stinted in their food, as to render them comparatively of little value.

In the few instances where attention is paid to the breed of cattle on the inclosed farms, the long horned are the kind generally preferred, and are far superior to the original breed of the county, both in size and shape, as well as in the other advantages which ought to be attended to by every farmer who occupies a breeding-farm, namely, their extraordinary disposition to fatten, and to lay the greatest quantity of flesh and fat on the rump, loins, and other parts of the body, which always sell highest at market.

The dairy farmers in the south-west part of the county, however, prefer the short horned Yorkshire cows, from which county they are principally supplied. And, as they never rear any calves; they sell them when a few days old, to a set of men who make a trade of carrying them to the markets of Buckingham, and other places, where they are purchased by dairy farmers from Essex, to be fattened for veal for the London market*.

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nce which these calves are carried, from this county to Essex, as, it may be proper to give some account of the extraordinary

It is proper in a report of this kind, to mention the names of those gentlemen, and farmers, who have been most instrumental in introducing better modes of husbandry, and improvements in the breed of stock; and though little has hitherto been done, comparatively speaking, in introducing a better breed of neat cattle, into this county, yet, Mr Pearce of Chapel Brampton, and Mr Robinson, at Wellingborough lodge, deserve to be mentioned, as having been at considerable expence and trouble in this respect.

Mr Pearce bought a bull calf of the late Mr Fowles of Rollright, in the year 1790, at one hundred guineas; and having sold part of his stock in the year 1793, was abundantly compensated for this outlay of money, from the very high prices which he received for what he disposed of; as a proof of which, it may be mentioned, that he sold a bull-calf of this breed, only ten days old, at 40 guineas; and, that a bull and four cows were sold for L. 331 : 5 : 6.

Horses.—There were very few work horses bred in this county formerly, though, of late years, considerable pains have been bestowed in improving the breed of this useful animal; and from the increased demand, and the consequent high price, the attention of the industrious farmer, will, no doubt, be more generally turned to this important object. The horses used in the operations of husbandry,

manner in which they are transported. Sometimes 10, 15, or 20, are p being laid on their backs on straw, and their feet tied. They are maintained for 8 or 10 days together on nothing but wheat-flour and gin, mixed to are here called gin-balls. In this manner, most of the calves bred on th in the county are disposed of; such a number only being reared as are keeping up the ordinary stock of milk-cows.

bandry, are for the most part purchased in the counties of Derby, Lincoln, and York ; they are bought in at two or three years old. The object of the Northampton-shire farmer being to purchase horses, which are likely to answer either for the coach, the army, or large waggons, he keeps them two, and sometimes three years, and generally disposes of them at a profit of from L. 7 to L. 10. A horse proper for the coach, sells for about L. 40 at five or six years old ; a horse of the same age for the army, at about L. 25 ; and a dray or waggon horse, at about L. 30.

Some years ago, it was the practice here, to rear blood horses ; but experience has proved, that these animals, however valuable they may still be in the estimation of the gentlemen, are unprofitable to the farmers, because the least blemish renders them altogether unsaleable ; and if they should not meet with any accident, they must remain so many years on the farm, before they can be sent to market with advantage, as to render the profit precarious, and trifling. Such horses as are now bred are fit to go into the team at two years old, and after two or three years service on the farm, they are generally sold for one or other of the purposes above mentioned. It is worthy of remark, that a few days ago a horse of the last description, with only one eye, was sold for forty guineas, while it is well known that a blood horse, with such a blemish, would scarcely have been worth notice.

Some of Mr Bakewell's best horses have covered in this county some years, though at a very heavy expence to the individuals who subscribed for procuring them. There is nothing, perhaps, that would tend more to the general improvement of this species of stock in the county, than if a number of the proprietors were to purchase some of the best stallions

stallions that could be found in the neighbouring districts, so that the tenants might be accommodated without any great expence or trouble. It was by this means that the breeding of blood horses came into such general practice here. And therefore, if the proprietors were to adopt this plan, it would induce their tenants to turn their attention to the breeding of such horses as are useful in the operations of husbandry, as well as for various other purposes; for which the county is peculiarly well situated, the distance from London being so great as to prevent the farmer from experiencing a rise of rent, or an additional charge for labour on that account; while he is, on the other hand, within the reach of the best market which this or any other kingdom can afford for the sale of draught horses.

Sheep.—There are here three different breeds of sheep, which may be classed as follows, *viz.* The original breed of the county, the old improved, and the late improved, or new Leicester breed. About 50 or 60 years ago, when this district was in general in the open field state, no attention was paid to the improvement of the breed of sheep. The points which marked a good sheep, in the opinion of the people of those days, were, the wool thick set on the back, an open rump, loin wide, legs open, and bones clean from wool, opposed to what is now called *gum or coarseness*. They were generally sent to market from 2½ to 4 years old, and weighed on an average about 18 lb. the quarter. This breed, however, are now very rare, being confined to those parts of the county where commons abound.

About 25 years ago an improvement was attempted, by crossing the ancient breed with tups from Warwickshire and Lincolnshire, the breed of Warwickshire being noted for great bone or size, and that of Lincolnshire for the quantity of wool.

With the success of this experiment the farmers seemed perfectly satisfied, as a general opinion prevailed that the animal would feed in exact proportion to the size of bone, and that an additional quantity of wool might be produced, without any detriment to the carcass. This practice, therefore, went on for many years. The new breed improved greatly in size, and the farmers gave themselves no trouble to ascertain whether the increase in size and weight could be accounted really beneficial or not. And so fixed and rivetted were they in the opinion of the good choice they had made, that it was not without much difficulty they could be persuaded of the possibility of introducing any additional improvement. This, however, has of late years been effected, and the new Leicester or Dishley breed (which form a complete contrast to the former) are pretty generally introduced, owing principally to the following circumstance: Mr Bakewell, whose name stands unrivalled in this line, about the year 1788, instituted a society, consisting of himself and 15 or 16 other respectable farmers in Leicestershire and the neighbouring counties *. This society had for its object the improvement of the different breeds of stock, particularly of sheep. And by almost every account, they seem to have succeeded beyond their most sanguine expectations.

To follow them through all the experiments which they have individually made, or to detail the proofs which they are ready to produce, in regard to the difference of bone, offal, wool, &c. in order to ascertain the advantages which the new Leicestershire breed possesses over every other, would be an endless

* Of this number, the following members reside in this county :

Messrs J. and S. Robinsons, Wellingborough; Mr John Tomlins, Rockingham Park; Mr John Bennet, Watford; and Mr John Manning, Arlingworth.

less task. And though these experiments seem to have been fairly and candidly made, yet, as none have been attempted, in order to prove the superiority of any other breed over this, it appears a matter of more general importance, to state fully in what respects this breed is said by those more immediately interested, to excel all others ; and then leave it to the impartial public to determine whether they have succeeded, and to what extent.

1st, It is said, that this breed will, on a given quantity and quality of food, produce a greater profit to the farmer than that of any other.

2^d, That they are extremely handsome or well made, and therefore more disposed to fatten.

3^d, That they carry more flesh and fat on the same weight or size of bone.

4th, That they will thrive on such pasture as other flocks would fall off upon.

5th, That an acre of land will maintain or fatten a greater number of them than of any other breed which bear the same proportion in size of carcass.

6th, That though the quantity of wool is about one fifth less than that of the old Northamptonshire breed, yet the value by the pound is about one tenth more ; and that, for the reason last mentioned, both the quantity and quality of the wool, if the return is calculated by the *acre*, must be in favour of this breed.

7th, That this breed are ready for market in April or May, whereas the others cannot be offered for sale before September or October ; and that, therefore, not only a greater number can be kept on an acre, as above mentioned, but a summer's grass is saved in the one case, which is used in the other.

8th, That the mutton of this breed, in consequence of the closeness of its texture, will keep several hours longer in warm weather than that of any other of the same size.

These

These are the most valuable properties which this breed of sheep is said to possess over all others; and if they really do possess them, it is not to be wondered at that their superiority should be so strenuously maintained.

On the other hand, it is asserted by many, that all the boasted superiority consists more in the high prices at which the members of the society dispose of their tups, than in any real improvement in the shape or constitution of the animal; and therefore they affirm, that this superiority must fall to the ground, as the breed comes to be more generally introduced.

It is perfectly clear, that high prices given for any species of breeding stock, certainly does not, *in every instance*, prove the intrinsic value or superiority of the breed; and therefore, if the new Leicester breed of sheep have nothing else to recommend them, they will not long keep up to their present character; but those who seem anxious to depreciate this breed, ought to come forward with something more likely to carry conviction to the mind, than bare unsupported assertions, which they cannot expect will meet with much credit.

The particulars above stated, in which this breed are said to excel all others, (and which have been inserted here, in order to bring the question fairly to issue), may be proved *true* or *false*, by every intelligent farmer in the neighbourhood; but as no attempt of this kind has hitherto been made, it is but fair at present to suppose that the superiority really remains unquestionable. The writer of this Report pretends to no particular knowledge in regard to the different breeds of sheep, and is one of those who would be ready to suppose that the size alone is what stamps additional value on either a sheep or a bullock; and, therefore, what is here stated, is

the substance of what he learned in the course of his survey, rather than his own private sentiments. It is, however, the general opinion over the kingdom at large, whether it be *well* or *ill* founded, that the new Leicester breed of sheep is superior to every other. Though it is not intended to state that they have attained the highest possible degree of perfection to which it is practicable to bring the species, it is presumed that even Mr Bakewell himself, deeply interested as he is, will not maintain this point ; and therefore, in place of with-holding that degree of praise to which this society seems so justly entitled, it would be fortunate for the community at large, if some men, equally knowing and attentive, would endeavour to prove the possibility of improving the breed to a still higher degree of perfection ; in the prosecution of which attempt, every well wisher to his country will be anxious for their success. It may be added, that one great objection to the new Leicester breed of sheep, is *their disposition to fatten to an extraordinary degree*, and that they are not so *delicate eating* as those sheep which require longer time to be ready for the market. It is believed, that the warmest advocates for this breed of sheep, will not hesitate to allow their disposition to fatten, though they may dispute the other point, which depends in a great degree on the taste of the consumer ; but if it is certain, that a quarter of this mutton, weighing upwards of 30 lb. will only have 2 lb. weight of bone, while a quarter of *the old improved Northamptonshire breed*, of the same weight, will have about 5 lb. the improvement of the breed is at once determined, so far as the opinion of the *great body* of the consumers can go ; as a mechanic, or labourer, who has a large family to support, by his earnings, if sensible of the fact, will be ready to agree, with the new Leicester society, that an improvement has really been effected, at least to the

extent of the value of 3 lb. of meat, in a quarter of mutton, compared with that of an equal weight of bone. It has been calculated, that every inhabitant in the kingdom eats a sheep in the year. The calculation does not seem to be extravagant, and therefore the great question in a national point of view, whether the breeds of these animals are improved, or reduced, to the value of 1s. the head, appears of very great importance, and no doubt merits every degree of attention which the Board of Agriculture can bestow, the difference either way being nearly equal to L. 400,000 a-year. The manner in which this species of stock is managed, and the prices, and conditions on which the tups are hired out, are so particularly mentioned in other reports of this nature, that it is judged proper to avoid a minute detail here, as not tending in any degree to promote the object in view.

OBSTACLES to IMPROVEMENT.

The obstacles to improvement may be classed under the following heads :

- The continuance of open field lands ;
- Tithes payable in kind ; and,
- The want of leases.

Open Field Lands.—The management of the open field farms is governed by the established customs which have prevailed in the parish for ages. An open field parish may be classed into three divisions, *viz.* tillage, meadow, and pasturage.

The tillage lands are cropped in the manner before mentioned, and the several occupiers must conform to the ancient mode of cultivation of each division or field in which their lands are respectively situated ; from which it will appear, that one obsti-

nate tenant (and fortunate must that parish be accounted, where only one tenant of that description is to be found) has it in his power to prevent the introduction of any improvement, however beneficial it may appear to the other inhabitants of the parish. The tillage lands are divided into small lots, of two or three old fashioned, broad, crooked ridges, (gathered very high towards the middle, or crown, being the only means of drainage that the manner in which the lands are occupied will admit of), and consequently the farmer possessing 100 acres, must traverse the whole extent of the parish, however large, in order to cultivate this small portion. The great additional expence of cultivating lands, so situated, must be obvious to every farmer of common understanding; while the never-ending rotation of corn-crops, to which the lands are subjected, must render them incapable of producing any tolerable returns.

The meadows are kept in a state of common pasturage from the time the hay is carried off till Lady-day, by which means the crops of hay are very indifferent, compared with those produced on inclosed lands properly managed.

The leys are generally divided into three fields; one is allotted for the pasturage of the sheep, another for the cows, and, on the third, the shameful practice of *tethering* the horses is still continued. And by every information that could be procured, it appears that the stock is not kept with a view to any profit that can possibly arise from the sales, but merely as the means of cultivating and manuring the soil. Indeed, long experience has evinced, that no species of stock kept in these open fields, can be carried to market on terms nearly so advantageous, as the same articles reared by those farmers who occupy inclosed lands; nor is it to be supposed, considering the manner in which the stock is treated, that the owners will pay much attention

to the improvement of the different breeds. While the numerous inconveniencies attending the occupation of land, so dispersed and intermixed, as open field lands always are, will remain for ever a bar to the introduction of any improved system of husbandry; the greatest, indeed the *only* objection against inclosing is, the depopulation of the parish, which, it is said, generally takes place in consequence thereof: While it may be admitted, that the inhabitants of a parish must undergo a very material alteration in their situations, in consequence of its being inclosed; yet it does not follow of course, that depopulation must be the consequence; as, though several of those who occupy small farms, must necessarily be removed, in order to enable the proprietors to class the lands into farms of a proper size; yet it is equally clear, that a new set of people must be introduced, such as hedgers, ditchers, road-makers, and labourers of every description; and therefore, this may rather be called a shifting of population from one village to another, than an expulsion from one particular parish: And were it clear, that depopulation was the consequence of inclosing a parish, that depopulation does not arise from the inclosing, but from the total alteration of system which commonly takes place in the management of the lands. For if, in place of laying down the lands in grass, which but too generally happens on these occasions, they were cultivated in an alternate course of corn and grass husbandry, the number of hands necessary for the cultivation, and carrying on the various improvements, which would in such a case be immediately introduced, would be at least equal to the number of inhabitants in the open field state.

The average rent of an acre of open field land in this district, including the value of the tithes, which may be reckoned at 3 s. 6 d. *per* acre, may amount

to 11 s. 6 d. while the average rent of an acre of the inclosed lands, which are generally exempted from tithes, may be accounted at 20 s. which makes the difference of 8 s. 6 d. *per* acre; and as there are 89 parishes in this county, in the open field state, which may contain nearly 150,000 acres, the rent which the proprietors of these parishes lose by keeping them in an open field state, may be estimated at upwards of L. 60,000 a-year; while at the same time the introduction of improvements are precluded, and consequently an increase of rent on rational principles. It may, however, be proper to add, that humanity, as well as strict propriety, should induce those who act as commissioners under an inclosing bill, to give a compensation in land in every case where possible, to those having a right of commonage in the parish, in place of a consideration in money, by which means those people, in place of being obliged to remove, would be induced to build small cottages upon their own property.

One great obstacle to the inclosing of parishes, seems to be the very great expence to which the proprietors are subjected, in procuring the act of Parliament, and carrying it into execution. As this complaint is general all over the kingdom, it is to be hoped, that some plan will be devised by the Legislature for obviating this difficulty, and for enabling proprietors to effectuate this great improvement with more facility, and at less expence. There is not perhaps any one circumstance regarding the agriculture of England, that deserves the serious attention of the Board of Agriculture more than this.

Tithes.—The collecting of tithes in kind is very generally complained of, and in those parishes where that mode is adopted, it certainly operates very powerfully against the introduction of improvements in husbandry; while at the same time it is attended with very disagreeable consequences, both

in a religious and political point of view, as it is often the means of creating such divisions between the clergyman and his parishioners, as renders the religious instructions of the former of little avail, while it loosens that chain of intercourse and connection which it is considered of so much importance to keep united. It has happened, (though to the credit of the clergy of this district be it said, the instances are very rare), where the tithes have been let to a layman for the purpose of oppression, he has been known to exert that authority with which he was invested, and has not only taken the tenth shock of corn, and the tenth cole of hay, but also the tenth lamb, pig, hen, egg, &c. nay has even gone into the garden, and taken not only the tenth part of the fruit, but also the tenth of the produce of the kitchen-garden. Under such circumstances as these, it may be asked, who is the farmer who would not feel himself aggrieved?

Many plans have been suggested, in order to bring about an arrangement of tithes, and to place them on some permanent footing. It has been proposed, that the proprietors should farm the tithes in each parish, or that a corn-rent should be fixed by the average price of grain for a number of years past; but that which appears most likely to meet general approbation, and which seems best calculated to do justice to all parties, is to give the clergyman a compensation for his tithes in land, because the depreciation in the value of money has been so great, as to render any arrangement which is to be founded on it as a medium by which the value is to be ascertained in future times, very uncertain; whereas the produce of land must always bear reference to the value of money at the time.

Whether the open field parishes are to be inclosed, or allowed to remain in their present state, still it is humbly supposed, that a general arrangement might be made respecting the tithes, by giving a
 compensation

compensation in land ; and that upon the same principles, in which those who act, as commissioners under inclosing bills, determine these matters, which is generally by finding the clergyman entitled to one fifth or one sixth of the tillage land, and one ninth of the pasture, or two thirteenths of the whole parish.

Were this desirable object by any means obtained, improvements in agriculture, and the different breeds of stock, would no doubt take place ; and instead of the clergyman and his parishioners living in a state of contention, or warfare, we should see them living as one great family, in harmony and peace, and the clergyman considered as the parent and preserver of that bond by which they are united.

Want of Leases.—Next to the modes of culture, and the management of stock, which *must* according to the present system be universally practised in the open field lands, and the collecting of tithes in kind, nothing can operate so powerfully against the spirited exertions of farmers, in regard to the introduction of better modes of cultivation, and greater attention to the improvement of the different species of stock, than the *want of leases*.

Every farmer who possesses a farm from year to year, must feel *that kind of dependence* which must tend in a greater or less degree to damp his spirit for improvement, and must prevent him from doing that justice to his farm, which would enable him to pay the highest possible rent to his landlord, or to procure that *fair profit to himself*, to which the extent of capital sunk in carrying on the operations of the farm, and his own industry, are entitled.

In such a situation, the *prudent* farmer must be restrained from any spirited expenditure, however much he may be satisfied that the improvements which might thereby be introduced, would, under
other

other circumstances, prove beneficial both to his landlord and himself.

In every country where improvements have been successfully and extensively carried on, leases have been granted, and every proper and reasonable encouragement given to the tenants; and where this mode of letting lands on lease has been introduced, the proprietors have in every instance found it for their interest to pursue the same plan; because they saw that the tenants, feeling themselves possessed of an interest in the improvement of the soil, bestowed every degree of attention on that object, and the landlord, at the expiration of the lease, considering himself justly entitled to derive some advantage from the exertion and industry of the former tenant, to whom he had given this assurance, demands and receives an additional rent. The best proof, in this case, that granting leases is the most probable means of securing the improvement of farms, is to refer to the particular district now under review, where it will be found, that it is only on these farms where leases are granted, that improvements are carried on to any extent.

It is true indeed, that few instances have occurred here, where the proprietors have not behaved to their tenants with that honour and good faith becoming their rank and fortune. Yet there are instances where tenants have been obliged *repeatedly* to agree to pay an advance of rent, rather than remove, while, from the uncertainty of the tenure on which they held their farms, they were debarred from making these exertions, which an advance of rent demanded, and which always happens in such cases when leases are granted.

While the proprietors remain satisfied with the rents which they receive, (which in general are high enough under the present circumstances), it is not probable that any material alteration will take place, either in regard to the manner of letting the land, or

the system of agriculture. But if a general rise of rent should take place, it will be necessary to secure the tenant that permanent interest in the farm, which will entitle him, with propriety, to adopt those means of improvement which will enable him to do justice both to the landlord and himself. It may be added, that if leases were granted on a reasonable advance of rent, and for 19 or 21 years, the community at large, as well as the individuals more immediately interested, would be benefited thereby; and this particular district, which is so favourably situated, would, in a few years, be one of the best cultivated in the kingdom.

IMPROVEMENTS SUGGESTED.

From the preceding account of the modes of cultivation adopted in this district, it appears that about one third of the tillage lands have been for ages, and are still continued, under a constant course of corn-cropping. It is not necessary to point out at greater length the impropriety of an adherence to this system, nor to recapitulate the reasons stated for recommending so strongly an alteration in the management of the commons and woodlands. What has been already stated, will, it is to be hoped, induce the proprietors, and those immediately concerned, to turn their attention to those objects, and their own good sense, more than any thing that can be stated in a report of this kind, will enable them to adopt such measures, as are most likely to promote the improvement of the country, in these respects.

There is a very small proportion of what may be called the old inclosed lands at present under the plough, and whether it is owing to that universal prejudice which has long prevailed among landlords, against the breaking up of old pasture fields, to want of activity in the occupiers, or to the improper manner in which they were at first laid

down to grafs, it is not neceffary here to determine ; but it muft be obferved, that thefe lands are not at prefent devoted to the moft profitable purpofe to which they might be applied, being in many places greatly over-run with ant-hills, and producing a coarfe and unwholfome fort of herbage. Thefe lands would, no doubt, be made much more productive by plowing, artificial manure, and other means of improvement that might be adopted. Two objections naturally occur in the mind of the landlord againft plowing up thefe old inclofures, as they are called : The 1ft is, That the tenant would receive a great additional advantage by the luxuriant crops of grain which he would reap, and without making any additional acknowledgment to the landlord ; and the 2d is, The risk which the landlord runs, that the tenant will not beftow due pains in laying down the fields again into grafs. But, if the fystem is a good one, (and the practice of almoft every other country proves that it is), thefe two difficulties may be eafily obviated, as the landlord may ftipulate with the tenant, for an advance of rent during the period when the lands are in the courfe of corn-cropping, and he has it completely in his power to punifh the tenant for any act of impropriety he may be guilty of, in regard to the manner of laying down the lands into grafs.

The new inclofed lands are in general well managed ; and where the foil is of a reddifh colour, with a fmall mixture of gravel, (of which there is a confiderable extent, particularly towards the middle and upper parts of the county), the rotation of cropping practifed, that of the one half in grafs, and the other half in corn and turnip, feems the beft adapted for keeping it in a high ftate of cultivation, and the alternate courfe of corn and grafs husbandry, is probably the moft advantageous that can be introduced, both for landlord and tenant ; as, from the great number of fheep which can be-kept upon the
artificial

artificial food, produced on a farm, consisting of a proportionable quantity of this kind of land, the occupier is enabled to relieve and assist his natural pasture grounds, as circumstances and the seasons may require. And this mode of management seems also best calculated to enable the tenant to pay the landlord the greatest possible rent, while it prevents him from suffering those inconveniencies which must necessarily happen by the fall of prices, to that farmer who can carry to market one species of commodity only.

To a person acquainted with the best modes of cultivation adopted in all the more improved parts of Scotland, where every kind of soil, from the light lands of Norfolk, to the strong clays of Lincolnshire, are to be met with, it must appear surprising to see a man and a boy, with four or five horses, employed for the greatest part of a day, in plowing an acre of land, while in almost every part of North Britain, the same operation is performed in less time by a man and two horses, without a driver.

If neat light ploughs, with cast-iron mould-boards, were introduced, there is no doubt but a man with two horses, would do the same work which they now perform with double the number, and to as good purpose. It is, therefore, worthy of the attention of those proprietors who take a pleasure in cultivating a farm on their own estates, to make the experiment; for it is a well known fact, that by lessening the expence of cultivation, the tenant is enabled to pay a higher rent; and a great proportion of what is saved in this respect goes ultimately into the landlord's pocket.

For the same reason, it may be proper to recommend the introduction of the machine now so generally used in Scotland for threshing grain; and which, from several years experience, has been found to execute the work to much better purpose than can

be performed by manual labour. It is worked either by 2 or 4 horses, where water cannot be procured ; and it will thresh from 20 to 40 bushels in an hour, and separates the corn from the chaff at the same time ; while the ordinary servants on the farm are sufficient to put the unthreshed corn into the machine and carry off the straw. The expence of these machines, on an average, does not exceed L. 80 ; and the interest of money, and annual tear and wear, may be reckoned at L. 10 a-year. In a country where the threshing of 120 quarters of grain costs that sum, the introduction of such a machine as this must be a great improvement.

CONCLUSION.

In the preceding Report, every degree of pains has been taken, in order to give a faithful account of the present state of husbandry in this county ; and while, on the one hand, the defects in the modes of cultivation, and the manner in which the operations of husbandry are in general conducted, have been freely mentioned ; on the other, such as appeared to be the great outlines for improvement, have been pointed out ; and after stating that a spirit for improvement is certainly introduced among all ranks in this country, and which, if properly encouraged, by the removal of those obstacles which must ever operate as a bar against the general introduction of spirited agriculture, cannot fail to be attended with the most beneficial consequences, in every point of view. It therefore remains only to make those acknowledgments which are so justly due, for the assistance received from many respectable Noblemen, Gentlemen, and Farmers, whose polite attention, and friendly manner of communicating their sentiments on every subject connected with the survey, rendered the employment in every respect satisfactory and agreeable.

A P P E N D I X.

COMPARISON between the ENGLISH and SCOTCH Systems of Husbandry, as practised in the Counties of NORTHAMPTON and PERTH.

HAVING been directed by the President of the Board of Agriculture to draw up a comparative statement, of the different modes of husbandry, practised in the county of Northampton, which is situated in the centre of England; and that of Perthshire, lying near the coast of Scotland,—it may be necessary to state, for the information of an English reader, that the county of Perth is the Yorkshire of Scotland in extent, and pretty similar to the West Riding of Yorkshire, and West Lothian, in respect to surface and general appearance, there being bleak barren mountains, and extensive lakes, in each of these counties.

The Carse of Gowrie, which may be very properly denominated the Garden of Scotland, is situated in Perthshire. This is a track of rich clay land, containing about 30,000 acres, superior in fertility to any other land in Scotland, and not to be surpassed by any of the same extent in England.

In order to form a correct idea of the rural economy of the two countries, prior to the introduction of improvements in the modes of culture in either, it may be proper to observe, that previous to the year 1700, the state of society in England and Scotland, appears to have been pretty much the same.

About that period, King Alfred divided the kingdom of England into tithings and hundreds; and the honest inhabitants of every village and township, became by that law answerable, in their own private families and property, for all the house-breaking, robberies, and other depredations, committed within their respective districts, and were also bound to associate with their neighbours in arms, in order to repress every violence, and to maintain peace and public order. In Scotland, the laws came to be properly respected, or the executive government possessed that power and authority, necessary to prevent the great feuds between the nobles and their dependents, from harassing and distressing their less

neighbours, it was common for the farmers, who then lived in villages, to enter into an agreement, called a *bond of good neighbourhood*, in which the acts which could be construed into bad neighbourhood were narrated, and certain penalties annexed to the commission of each, and from the manner in which they occupied the lands, (which was the same as is practised in the open field parishes in England), as well as from the conditions contained in these bonds, they were induced to turn out their cattle, on any general invasion of their property.

As this being the ancient state of both countries, and it being well known that a regular Government, together with the arts and habits of civilized society, and improvements in Agriculture, were much earlier introduced into England than into Scotland, it may appear difficult to account for the difference in which both countries are now inhabited. In England the people are still living crowded together in villages, as in former times; whereas in the cultivated parts of Scotland, every farmer lives in the centre of his own farm, as if the feudal system had never existed. But that difference will be removed, when, on the one hand, the manner of cultivating the open field lands in England is considered, and that inclosing only came into general practice of late years; and, on the other, that it does not appear to have been any commonable lands in Scotland; since the year 1560, the payment of tithes in kind (except in a very few instances, and these where the tithes are in the possession of lay proprietors) have been abolished, and that the lands were in general possessed by great proprietors, who, when ever they were inclined, had it in their power, for the reasons just now mentioned, to divide their lands, and make such arrangements with their tenants as they judged most proper to promote the improvement of their estates; and that where a township was possessed by two or more proprietors, in place of a tedious negotiation with the Clergyman, and those having right of commonage, and an expensive application to Parliament for an inclosing bill, as is the case in England, the division of such lands, was effected by a petition or process before a Court of law, (which was attended with great expence), or amicably settled, by a reference to some man of respectable character in the neighbourhood.

In the following statement, attention has been paid to reduce all the measures therein mentioned, to the standard of the weights and measures actually used in England, and the rents and returns in both countries, calculated by the English acre, and by the Winchester bushel of 8 gallons.

gallons. It may be necessary, however, to state that one acre contains 4840 square yards, and a quarter, or eight W cubic inches. The boll of barley or of the standard of Scotland), contains 1: wheat or beans measures 8789 cubic in

L E A S

NORTHAMPTON-SHIRE.

In this county, there are scarcely any lands held by tenants under leases, except those granted by the Bishop, Dean, and Chapter of Peterborough, which are for 21 years, renewable every 7.

The tenants, in general, possess their farms only from year to year. There are, however, written agreements entered into between the landlords and tenants, in which the mode of cropping the lands is specified.

The farm-house and offices, are generally kept in repair, at the joint expence of the parties; though, in a great many instances, the whole expence rests with the tenant.

The tenant, is, on all occasions, expressly debarred from breaking up any old pasture-grass, and from selling hay or straw.

The term of entry, to a grazing farm, is at Lady-day, and to tillage lands, at Michaelmas.

The size of the farms is much the same in both counties.

V A T I O N S.

led so much, to the general introduction which have taken place in Perthshire, anting leases for a considerable number t, and enterprising tenants.

ires, such as lime and marl, have come n consequence of receiving a lease for oy acquires a permanent interest in the commences his operations in the most ways drains, and limes, or marls, that allow, during the first course of the rota-

ire, who holds his farm from year to ed in the honour of his landlord. if he ind of artificial manure, (which, though or on any other means of improvement, annot be expected. And it is a certain d rather pay 3 s. or 4 s. *per* acre of addi- d in Northamptonshire, on a lease of 19 nd hold the farm on such an uncertainty, from cultivating it to the best advantage.

N D T A X E S.

PERTH-SHIRE.

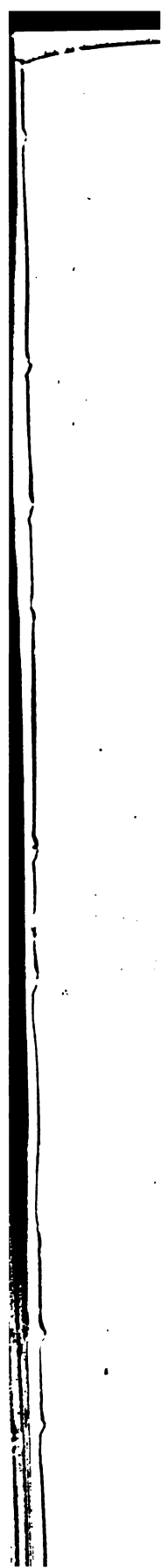
The rent of lands in the Carfe of Gowrie is from 30 s. to 45 s. *per* acre, average about 35 s.

For lands in the open field state, from 10 s. to 16 s. medium, about 13 s.

For inclosed lands, which are all cultivated in an alternate course of corn and grafs husbandry, 22 s. *per* acre may be reckoned the medium rent.

The rents in the Carfe of Gowrie are paid partly in money, and partly in wheat and barley.

In other parts of the county the rents are paid in money, and either at Martinmas, (about the 22d of November), after reaping the crop, or, the one half at that term, and the other half at Whitsunday following.



red by the tenant, from his superior management of a farm, as well as what he saves, by lessening the expence of cultivation, sooner or later, is its way into the landlord's pocket.

C L I M A T E.

Periods at which seed-time and harvest commenced in the different parishes, for the six preceding years, from 1788 to 1793 inclusive.

NORTHAMPTON-SHIRE.

The periods at which seed-time and harvest commenced on a particular farm in this county for the six preceding years, from 1788 to 1793, will be found in the following Tables :

PERTH-SHIRE.

Below is an account of the periods at which seed-time and harvest commenced on a particular farm in the Carse of Gowrie, from 1788 to 1793, inclusive.

Spring Corn.	Barley.	Harvest commences.	Years.	Wheat.	Spring Corn.	Barley.	
		4th - Aug.	1788.	11th Sept.	7th April.	6th May.	2
		18th ditto.	1789.	11th ditto.	6th ditto.	9th ditto.	2
		16th ditto.	1790.	13th ditto.	3d March.	6th ditto.	2
5th Mar.	11th Mar.	8th ditto.	1791.	14th ditto.	7th ditto.	4th ditto.	1
1st ditto.	15th ditto.	13th ditto.	1792.	4th Oct.	9th April.	7th ditto.	2
18th Feb.	21st ditto.	1st ditto.	1793.	10th Sept.	25th Mar.	3d ditto.	2

O B S E R V A T I O N S.

By the above statement, it appears, that there are about 15 days difference in the commencement of harvest, in favour of Northamptonshire, on average of these six years.

The climate in the Carse of Gowrie, may be considered as equal to that of any other part of Scotland. And that of the other parts of Perthshire, is superior to the northern counties of England.

. ROTA-

ROTATION of CROPPING, most ge in each of the Counties, for raising th

NORTHAMPTON-SHIRE.

The old inclosed lands are generally kept in a state of pasturage.

The open field lands, at least that part of them which is considered proper for tillage, is under a constant course of corn-cropping, as follows, *viz.*

- 1st year, fallow or turnip.
- 2d — wheat, part barley.
- 3d — beans, with a few acres in oats.

The new inclosed lands are principally employed in the cultivation of grain, and cropped in the manner under mentioned, *viz.*

- 1st year, fallow, part turnip.
- 2d — wheat, barley after the turnip.
- 3d — beans or pease.
- 4th — barley, with 18 lb. red clover.
- 5th — clover.
- 6th — ditto.
- 7th — part beans, and part oats.

O B S E R V A

Without asserting that the rotations grain cultivated in Perthshire, or on th
tonshire, are the best adapted to the

that can be introduced, it may be proper to observe, that the lands, under such management, are much more likely to produce valuable crops, of grain and grass, than if they were allowed to remain always in, or kept in a constant state of tillage. Experience has indeed shewn, that the best land in Northamptonshire, when allowed to remain in grass, is apt to be over-run with ant-hills, and to produce but very different crops. And it is presumed, it will not require much reasoning to convince, to the satisfaction of every intelligent farmer, that lands which are kept constantly under a course of corn-cropping, must be worn out and exhausted, to such a degree, as to render the crops of little value, compared to what might be expected on the same lands, if managed according to any of the rules above mentioned.

AVERAGE RETURN *per* Acre, of the different Species of Crops, in the different Counties, for the same number of Years, from 1787 to 1792, inclusive.

NORTHAMPTON-SHIRE.

PERTH-SHIRE.

Barley.	Oats.	Beans.	General average by the sum of all the 10 grains.	Years.	Wheat.	Barley.	Oats.	Beans.
Bush.	Bush.	Bush.	Bushels.		Bush.	Bush.	Bush.	Bush.
38½	45½	20	30½	1787.	21½	32½	42½	25½
39	33	21	27½	1788	22½	40½	54	21
34	53½	26	33½	1789.	29½	32½	43½	18½
35½	48	22½	32½	1790.	21½	39½	53	22
31½	39	20½	26½	1791.	24½	48	48½	35
27½	35	20	27½	1792.	24½	24½	37½	16
186	252	130	180	Div. by 6.	144	224	279	138
31	42	21½	30	General Average,	24	37½	46½	23

OBSERVATIONS.

From the above table, it appears, that the returns by the acre of the different species of crops, except wheat, is in favour of Perthshire, or ra-

ther the Carse of Gowrie ; for the calculation is formed from a particular farm in that district, though it should be of a farm is not cultivated agreeable to the rotation above, considerably more than one-sixth of it being annually under of which is sown after pease, or clover stubble ; and it must be supposed inferior to what might be expected, reaped, from lands regularly fallowed and dunged, and other farm in that corner of the county.

AVERAGE PRICES by the Bushel, at which Wheat and Beans, were sold off a particular Farm in each of the Years above mentioned.

NORTHAMPTON-SHIRE.

PJ

	1787.	1788.	1789.	1790.	1791.	1792.	General average.		1787.	1788.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.		s. d.	s.
1	5 5½	5 8½	6 4½	6 6½	6 3½	5 10½	6 0½	Wheat,	5 5	5
2	6½	2 6½	2 7½	3 3	3 1½	3 4½	2 11	Barley,	2 5	2
3	0½	1 10½	1 8½	2 4	2 5½	2 6½	2 2	Oats,	2 5½	2
4	7½	3 8½	3 6	3 11	3 10½	4 1½	3 9	Beans,	3 1½	2

OBSERVATIONS.

It appears that the price of oats is higher in Perthshire than in Northamptonshire, but that all other kinds of grain, sell higher in Northamptonshire than in Perthshire. That the price of oats should be higher in Scotland, will not be thought surprising, when it is considered that a great body of the inhabitants live principally on oat-meal, and the bread generally used is made of wheat flour. The prices of the other species of grain in favour of Northamptonshire may be accounted for, by observing, that Northamptonshire is more closely inhabited than any other county in England, where large manufacturing towns are situated, and that they generally find a market for their grain at home, or in the

arhood; and that though the Carle of Gowrie, properly so called, is as
 sely inhabited as Northamptonshire, yet the inhabitants of Perthshire
 ar no proportion to those of Northamptonshire, when the extent of the
 o counties are compared, and therefore the Perthshire farmer, must
 sk to a distant market for the sale of his surplus grain, which he gene-
 ly finds at Leith or Glasgow, and which he avails himself of by means
 the Frith of Tay, and the inland navigation which is opened between
 e Forth and Clyde, by which grain is transported from this last men-
 ed county, to Glasgow, which is the best market in Scotland. But
 e farmer in Perthshire, must be at an expence greater perhaps than the
 ference above stated, in conveying his grain to the best market; or,
 ich is the same thing, must sell his grain on terms so much lower, as to
 ble the merchant to transport it with advantage to himself.

DIFFERENCE of the Value of the returns by the Acre, in each of
 the Counties.

NORTHAMPTON-SHIRE.		PERTH-SHIRE.	
24 bushels wheat, the produce of one acre, at 6 s. 0 $\frac{1}{2}$ d.	L. 7 13 0 $\frac{3}{4}$	24 bushels wheat, the produce of one acre, at 5 s. 4 $\frac{1}{2}$ d.	L. 6 9 0
37 $\frac{1}{2}$ bushels barley, at 2 s. 11 d.	4 10 5	37 $\frac{1}{2}$ bushels barley, at 2 s. 8 $\frac{3}{4}$ d.	5 1 11
ditto oats, at 2 s. 2 d.	4 11 0	46 $\frac{1}{2}$ ditto oats, at 2 s. 6 $\frac{1}{2}$ d.	5 18 2
ditto beans, at 3 s. 9 $\frac{1}{2}$ d.	4 1 6 $\frac{1}{2}$	23 ditto beans, at 3 s. 5 d.	3 18 7
<hr/> Total average <i>per annum</i> , L. 20 16 0		<hr/> Total average <i>per annum</i> , L. 21 7 8	

OBSERVATIONS.

From the two first tables the above one has been formed, in order to
 the extent and value of the returns by the acre, in each of these
 ties, for a number of years, and by which it appears, that the balance
 in favour of the Carle of Gowrie, to the extent of 11 s. 8 d. on four
 es, or 2 s. 11 d. on each acre.

It was not possible to ascertain correctly, the weight of the crops of hay
 ed on the acre in Northamptonshire; but from the information re-
 ed, 18 cwt. may be considered as the full average of meadow-hay,
 about 25 cwt. that of artificial grass.

In the farm in the Carle of Gowrie, above mentioned, the average
 of hay by the acre, for 6 years, is nearly 29 cwt. There are no
 natural

natural meadow-fields in this district, Perthshire, except in the valleys, and all over in the Highlands, where, owing to great falls of rain to which that country is often very precarious.

L A B O

The PRICE of LABOUR NORTHAMPTON-SHIRE.

Butcher-meat, from 4 d. to 5 d. *per lb.*
Poultry, from 1 s. 2 d. to 1 s. 4 d. each.
Eggs, - 6 d. to 8 d. *per score.*
Butter, - 8 d. to 10 d. *per lb.*
Cheese, - 4 d. to 5 d. *per do.*
The wages of a ploughman, from L. 8 to L. 10.

A young man or boy, from L. 4 to L. 5.
A female servant, from L. 3, 10 s. to L. 4, 10 s.

Day labouring in summer, without board, from 1 s. 2 d. to 1 s. 4 d.

Ditto in winter, 10 d. to 1 s.

A man for the harvest month, from L. 2, 2 s. to L. 2, 10 s.

A woman by the day, 1 s. without board.

Grain is threshed at from 1 s. 3 d. to 2 s. 6 d. *per quarter.*

When the ploughmen receive board-wages, it is generally at the rate of 6 s. the week all the year round; but they are more commonly maintained in bed, board and washing in the farmer's family.

The ordinary breakfast and supper is cold meat, with bread and cheese, and for dinner, either roast or boiled meat, with pudding. Ale is allowed them on many occasions, and small beer they have always at command.

Labour commences about the same hour, at the different seasons, in each of the counties.

OBSERVATIONS.

From the above statement it appears, that the odds in the price of labour & provisions is much less than could have been expected. The only material difference being in the maintenance of the farm-servants.

A Northamptonshire farmer considers 6 s. *per* week as a reasonable allowance for the board of a ploughman, which, for 52 weeks, amounts

L. 15 12 0

The Perthshire farmer furnishes his ploughman with that quantity of oat-meal, which, on the average price of meal the number of years, amounts to 2 s. *per* week, to which, if 1 s. *per* week is added for milk, makes the whole expence the year

L. 7 7 4

For coals, bed-cloaths, &c. &c. may be added, 0 9 8

7 17 0

L. 7 15 0

Thus, in consequence of the different modes in which the farm-servants are maintained in the different counties, the Perthshire farmer saves about 15 s. a-year for each of his servants, which the other must expend. There is no probability, however, that the Northamptonshire farmer can avail himself of any information he may receive in regard to this particular, his ploughmen will not be disposed to give up their roast beef and pudding, and betake themselves to oat-meal and milk. But it is humbly submitted to his consideration, whether he might not lessen the expence of cultivating his farm, by reducing the number of servants and horses. The practice of plowing with a man and 2 horses, without a driver, is usual, not only in Perthshire, but all over Scotland. Whereas, in Northamptonshire, a man and a boy, with 3, 4, or 5 horses, are employed to do an equal quantity, which, for the sake of calculation, may be reckoned at an acre a-day in both counties; and let it be supposed also, that these men and horses are employed in plowing the whole year round, which period they will each have plowed 313 acres,—in that case the present accounts of the expence would stand as under.

NORTHAMP-

NORTHAMPTON-SHIRE.

Ploughman's wages,	L. 10	0	0
Boy's wages, -	5	0	0
Boy's board, at 4 s. <i>per</i> week,	10	8	0
Maintenance of 4 horses, at			
L. 15 each, -	60	0	0
	<hr/>		
	L. 85	8	0

By the above account, including only the maintenance of the horses, which a pence of plowing an acre of land in Northamptonshire is 5 s. 6 d. while the same operation is as Gowrie, or in any other part of Perthshire is 3 s. *per* acre; but as a greater part of the land is plowed on every farm, in a state of tillage, (some fields being repeatedly plowed) the power of every farmer in that county is 6 d. *per* acre. *N. B.* It is hardly necessary to mention that the calculation includes only such articles as are not the *whole expence* of plowing an acre. It is marked, that the total annual expence of plowing land in either county, is very different. A particular explanation of this, reference is made to the Carse of Gowrie, where it is estimated that cultivating a farm of 272 Scotch acres, exclusive of the Carse, costs 6 s. 4 d. or L. 2 : 8 : 4 *per* Scotch acre.

PLANTATIONS.

PERTH-SHIRE.

This county cannot *now* boast of forests or woodlands. Though from the great number of large oak and fir trees which are found in all the mosses and swamps in the higher parts of the country, it is perfectly certain, that at some remote period, a great part of the district has been covered with trees; the only vestiges of which that now remain, are several extensive tracts of copse-wood oak, along the sides of the different rivers and lakes, which are generally cut every 25 years.

The present landholders, however, seem extremely anxious to make up for the deficiency of their predecessors in this respect. And many thousand acres (not susceptible of cultivation), are now covered with useful and ornamental plantations. As one instance of which, may it be proper to observe, that the Right Honourable Lord Kinnaird, a few years ago, paid L. 800 for planting 200 Scotch acres. The plants consisted of oak, ash, beech, elm, plane, spruce, and Scotch fir, and to the number of 5000 to the acre.

V A T I O N S.

the woodlands in Northamptonshire, it is to be preserved, and the forests of the ancient forests in Perthshire, though now destitute of trees. And indeed there is no county, except the ornamental plantations, of the proprietors.

to preserve a succession of trees in Northamptonshire, which has become so general in the late years, should continue, the contrast

contrast in this particular (which is at Northamptonshire) will not long continue

L I M

NORTHAMPTON-SHIRE.

There is abundance of limestone in almost every corner of the county ; yet, except for the purposes of building, very little is manufactured in the district. Though in kilns properly constructed, it can be burned on terms so low as to enable the manufacturer to sell it at the rate of 4 d. or 5 d. *per* bushel.

O B S E R V A

The value of lime as a manure is well effected in producing great crops both of (of upwards of 50 years) have been ascertained by a farmer in the district.—The quantity in general (reckoning that every bushel of powdered lime) is about 380 bushels cost *per* English acre is about L. 2 : 7 : land in the course of a fallow, as a preparation done in the month of July, or before with a very shallow furrow ; and before is generally in September), about 24 loads also laid on the acre. The dung-carts nearly as large as those used in Northamptonshire of the Carse of Gowrie alone, which contain above 30,000 English acres, lime, has been imported for the last ; indeed almost wholly, used as manure.

In Northamptonshire, though lime is not used in every parish, it has hitherto been but part

or it is that the experiments which have been made, have not been judiciously conducted, or that the farmers, from the want of leases, are prevented from expending money in the purchase of a manure, from which an immediate return can be expected; certain it is, that there does not appear any great probability of its being soon introduced into general use, without the united exertion of the landlords.

COMMONS and WASTE LANDS.

NORTHAMPTON-SHIRE.

It is only in those parishes in this county which have been inclosed that the lands are held in severalty. The open field parishes are held both by proprietors and tenants, in the same manner as was the practice at the time they were first cultivated. And there, what in Scotland is called *run-ridge*, or *run-field*, universal prevails. To the preceding report reference is made to an account of the manner in which the commons and woodlands are occupied.

PERTH-SHIRE.

In this county the lands are all held in severalty; and commons, or what was formerly known by the name of *run-ridge* property, is scarcely known; even in the rocky and mountainous parts of the country, where the surveyor cannot drag his chain, every proprietor knows the bounds of his own estate; and where artificial boundaries cannot be fixed, natural ones, such as streams of water, or the summits of mountains, are made use of to ascertain the marches.

OBSERVATIONS.

The abolition of *run-ridge* or *run-field*, may be reckoned the first dawn of spirit for improvements in Agriculture that appeared in Scotland, and which, added to another excellent plan adopted by the landlords, which has been already taken notice of, *viz*, that of granting leases, accounts in a great measure for the very great improvements which have lately taken place in that kingdom; and it cannot admit of a doubt, that were the open parishes in Northamptonshire divided and inclosed, and the commons and woodlands converted into private property, in the manner in which the lands in Perthshire now are, the most substantial improvements would of course be introduced; and the produce of the lands, under such prior cultivation, as would in that event take place, become greatly abundant.

HARVESTING

HARVESTING

NORTHAMPTON-SHIRE.

In this county the wheat is reaped with sickles, and the barley, and oats, and beans are mowed with the scythe, and after being turned over are put up in coles in the field, like hay, where they stand some time, and are afterwards carried home, and either put into the barns, or built and thatched in the stack-yard.

The wheat is cut very high from the ground, and being bound up in sheaves, is allowed to remain in shocks in the field till it is ready to be housed; and after that is done, the stubble is cut with scythes, and carried home to the straw-yard, where it is either used for litter, or for thatching houses.

O B S E R V A

There is no operation of husbandry more than in the manner of harvestings, as appears above.—The mode adopted requires more hands to be employed cut down in the same space of time.—more completely, and all at once, may be compared with the Northamptonshire farmer the rate of wages and board-wages to be paid. Certain it is, that were the Northamptonshire farmer, it would be attended with great inconvenience, by which means, in bad harvests, the rains of rain which sometimes take place in the autumn which is generally used to set the corn in the ground calculated to defend the grain from injury in the consideration of the farmers in both seasons is not practicable to lay the corn from the ground could be easily bound up into sheaves. It is probable that the Northamptonshire farmer

quantity of grain, which is at present lost among the stubble, after every operation that can be used in raking the field ; and, on the other hand, the Northshire farmer would be enabled to accomplish the work in a shorter period, and to as much purpose, while he would be relieved from the necessity of trusting to people from the remote parts of the country, for cutting down his corns.—Such an invention as this just now mentioned has been found out, and is said to be very simple in its construction, being consisting more than a piece of pliable wood, formed into a kind of bow, and fixed on the scythe, and the other on the handle.—If it is found to answer in practice, it will certainly be an improvement of real utility.—The scarcity of hands was probably the first cause that induced the English farmer to use the scythe in cutting down his corns ;—and that cause induced some farmers in the neighbourhood of Edinburgh to adopt the same plan this year.

C O N C L U S I O N .

The preceding comparative account of the two counties might have been extended to a great many other articles, such as *farm-houses and barns, roads and bridges, implements of husbandry, &c. &c.* but as no material difference appears in these respects, it was judged unnecessary to enter into a minute detail of the particulars in either county. It may appear surprising to some readers, that no account is given of the live stock of these counties ; but without extending that article to a great length, it was found impossible to state any thing on the subject that would have been of any great degree to information.—Suffice it therefore to say, that in both counties there is yet great room for the active and intelligent farmer to introduce improvements in the breeds of the different species of stock. Such a spirit has, however, become pretty general among the farmers in both districts, and which, if aided by the landlords, will no doubt in a few years produce very beneficial consequences.

It is only necessary farther to add, that every endeavour has been used in order to execute this commission with candour and impartiality. And the general description of the modes of Agriculture and situation of the lands in each county, will, it is hoped on investigation, be found to be consistent with truth.—The time allowed for making the survey of any particular county, is such as to subject the surveyor to the necessity of procuring

procuring much of the necessary information from those resident in district, without having it in his power to inquire minutely into the particulars himself, and which in this case may have been either improperly communicated or not perfectly understood.

If any misstatement of facts should appear in the preceding count, it is hoped the candid reader will attribute it to the cause ready mentioned, rather than to any want of attention on the part of surveyor. Any deficiencies that may appear, will no doubt be amply supplied by the gentlemen, and intelligent farmers, to whom copies of Report will be transmitted by the Board for their remarks and objections.

GENERAL VIEW

OF THE

A G R I C U L T U R E

OF THE

COUNTY OF WORCESTER



GENERAL VIEW
OF THE
AGRICULTURE
OF THE
COUNTY OF WORCESTER
WITH
OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT

BY WILLIAM THOMAS POMEROY,
OF FAIRWAY, NEAR HONITON, IN DEVONSHIRE.

At Brit. DRAWN UP FOR THE CONSIDERATION OF
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[ENTERED AT STATIONERS' HALL.]

S455

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TO THE READER.

IT is requested that this paper may be returned to the Board of Agriculture, at its Office in London, with any additional Remarks and Observations which may occur on the perusal, written on the Margin, as soon as may be convenient.

It is hardly necessary to add, that the Board does not consider itself responsible for any fact or observation contained in this Report, which, at present, is printed and circulated, for the purpose merely of procuring farther information respecting the Husbandry of this District, and of enabling every one to contribute his mite to the improvement of the country.

The Board has adopted the same plan in regard to all the other Counties in the United Kingdom; and will be happy to give every assistance and power, to any person who may be desirous of improving his breed of Cattle, Sheep, &c. or of trying any useful Experiment in Husbandry.

London, December 1794.

COUNTY OF WORCESTER.

SITUATION AND SURFACE.

THE county of Worcester is bounded on the east by Warwickshire, on the west by Herefordshire and Shropshire, on the north by Staffordshire, and on the south by Gloucestershire. It is supposed to contain about 540,000 acres.

The face of this county, when viewed from any of the surrounding eminences, approaches rather that of a plain; the gentle slopes and risings to the east and west of Worcester, remaining scarcely any longer discernible. The state of its cultivation appears to very great advantage, as there are no tracts of any considerable extent, so barren, or so totally neglected, as to be without an agreeable, and profitable verdure. On a nearer view, from the central hill, which rises more particularly to the east of that city, a most beautiful landscape presents itself: the whole of the back ground, which, at its greatest distance, does not exceed twelve, and no where approaches nearer than eight miles (allowing something for the openings to the south-west and north), appears to be one continuation of noble hills; forming, as it were, the frame of the delightful picture that presents itself in the centre, diversified with all the beauties of hill and dale, wood and water. If the Aberley and Whitley hills occasion some irregularity in the frame, they will scarcely be thought to take off from the beauty of the piece; these, and the adjoining hills, rising with a bold front, and most of them cultivated

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3

4

vated to their summits, recall to the mind the enthusiastic description of Italy ; and the sheep, hanging as it were, from the brows of others, illustrate the much admired idea of the Roman bard.

SOIL.

THE soil is various : to the north of Worcester, which is situated nearly in the centre of the county, it chiefly consists of rich loamy sand, with a small proportion of gravel ; there is some very light sand ; a few spots of clay ; of black peat earth the same ; but chiefly inclining towards the east. In this quarter (the east) the prevailing soil is, for the most part, a strong clay. The waste land, which is very considerable, in general a deep black peat earth. To the south, between Worcester and the Vale of Evesham, the soil is partly of red marl, and part strong loamy clay ; other parts sandy loam ; and there is a small vein of land which partakes of each of these qualities ; the sub-soil, more especially under the second division, lime-stone. In the Vale, the soil is particularly deep, of a darkish colour earth, with a sub-stratum of strong clay and some gravel. Beyond this, on the confines of the county, and in the small detached parts, including the Cotswold Hills, a lime-stone prevails on the upper land, and a rich loam on the lower. To the south, between Worcester and Malvern, the general character of the soil, is a clay, mixed with gravel in different proportions ; the former prevailing in the lower, and the latter in the higher situations. To the left of this line, including Malvern Chase, a deep surface of clay is found in some places ; in others, a rich loam, inclining to sand ; sub-stratum supposed to be marl. To the right, till we approach a central point between the west and north, the proportion of clay increases gradually, till at

last, a strong clay occurs; this again becomes gradually more gravelly, till it joins the light sands on the north. Below, partly marl, partly soft sandy stone, with some lime-stone, is found. In each of these districts, some very rocky land, and in most, some loose stony soil, or what is here called stone brush, or brash, is met with; but no where are there any traces of flint or chalk.

CLIMATE.

THE air is temperate; even on its highest situations, it is not so bleak as to considerably impede vegetation; nor are there any extensive tracts in the low lands, of boggy soil, to injure it by their exhalations.

MODE OF OCCUPATION.

THE estates are, in general, tenanted, and mostly by tenants at will, with no other restrictions but those which custom has introduced. The landlords appear, in general, to have great objections to granting leases: when granted, they chiefly are what are called running leases, for twenty-one years, determinable every seven.

The farms are small, from 40l. to 300l. a year; there are certainly more under the former, than above the latter value. The number of gentlemen who occupy land, has increased considerably of late; and some there are, who hold forth very laudable examples of experimental improvement.

The land, if the waste be considered as a part of the pasturage, is, probably, very nearly divided between that and husbandry.

GRASSES.

THE grasses chiefly cultivated to prepare pasture lands, are the red and white trefoil, with a mixture of natural grass-seeds; but very little, with two or three exceptions, is going on at present in this way.

Laying down grass land.—The following excellent mode of laying down grass land, is adopted by Mr. WAKEMAN, of Buckford. Having prepared the land by a good summer fallow, of at least three ploughings, he provides a collection of the choicest of the grass-seeds which are found to flourish most upon the places adjoining to the land intended to be laid down. These seeds are obtained in the proper season of the year, at a small expence. The sorts principally made use of, are the *anthoxanthum odosatum*, the *poas trivialis pratensis et annua*, the *alopecurus pratensis*, the *cynosurus cristatus*, and the white, red, and yellow *trifoliums*, adding to the whole mixture a small quantity of the *lolium perenne*. After having sown the barley, these seeds are combed in with a light pair of harrows. By this method, the ground is immediately stocked with native grasses, without waiting years for their spontaneous production. In the winter of the second year, the seeds are covered with a meliorated compost.

LIVE STOCK.

SHEEP, bullocks, horses and pigs, are the stock: of the first species, by far the greatest part are a small sort of sheep, without horns, and with mottled faces, originally from Wales. They are interspersed throughout the county, and occupy almost universally the waste lands. In point of number, those called the Ross sheep, stand the next; most of which are

brought out of Herefordshire, though they are now bred in the western parts of this county: they are short legged, short, but particularly broad, on the back, without horns; their fleeces, for fineness, are supposed to stand unrivalled throughout the kingdom.

There are a breed peculiar to the Cotswold Hills, part of which are in Worcestershire; these are very general in the southern parts; they are without horns, long woolled, and of large size; having broad loins and full thigh, but rather light in their fore quarters. One cross of the Dishly sort, to add to the Cotswold the principal, or, according to some, the only perfection of the Leicestershire, *a good fore quarter*, is found to answer well; but a second cross is said to be injurious: it diminishes the size of the sheep, and the quantity of wool. The sheep of the first cross, when two years and a half old, will weigh from 36 to 40lb. per quarter; the quantity of wool shorn from each sheep, runs from 11 to 14lb. which wool, in 1793, sold at 1l. per tod, of 28lb. to the tod.

There are a few of the Leicestershire breed; their number increasing. Some of the Wiltshire are also introduced; and on the eastern side, the Warwickshire breed prevails.

The bullocks, on the western side, are chiefly of the Herefordshire breed; Staffordshire furnishes some, and indeed, all the adjoining counties. The Earl of COVENTRY has introduced the Holderness breed, with great success; his Lordship's tenant, at Mitton, has some from Devonshire, but they are not of the true breed of that county.

The breed of horses is chiefly confined to those sorts that may be useful in the cultivation of the land; they are, however, much heavier, and of course slower, than appear necessary for that purpose. Perhaps the general construction of the ploughs, and the unwieldy weight of the waggons, together with the badness of many of the parochial roads, may be thought to render them necessary. From the num-

ber of horses kept in Worcestershire, and the quantity of food they devour, it is said that they consume two-thirds of the produce of the land.

The great bar to the improvement of stock in general, is the little attention paid by most, to keep the different breeds of each species distinct.

WATERING LAND.

THIS beneficial practice has not been much attended to, nor is it generally well understood. The most considerable experiment in this way, has been made in the neighbourhood of Kidderminster, on some farms belonging to the FOLEY family, which has been attended with very great advantage*; nor have the others hitherto made, proved less successful. From the general aspect of the county, and the numerous brooks and water courses with which it abounds, there is no doubt that this improvement might be carried on to a very considerable extent.

CROPS.

OF the land appropriated to husbandry, nearly an equal quantity is employed in the production of wheat, and barley; rye is likewise sown on the light soils, chiefly to be grazed by sheep; the different kinds of pulse are also cultivated; vetches, both summer and winter, are common; sainfoin has been raised hitherto but in small quantities; oats are sown sparingly, under an idea that they impoverish the land; hemp and flax are likewise grown; but chiefly on small tracts, occupied by little proprietors; a general opinion

* See the Appendix, No. I.

prevailing, though unjustly, that these also impoverish the soil: the unjustness of this opinion, so far as it relates to flax, is asserted most decidedly, and from a very considerable experience. Except in the common fields, no particular rotation of crops prevail: the peculiar circumstances of the seasons, &c. seem to determine, and ought to decide this point.

Clover and turnips are generally cultivated; the latter on the light soils; more especially, where proper attention has been paid to hoeing, they are universally allowed to be the greatest improvement that has been introduced for a series of years. Clover is likewise found to answer very well, and almost always immediately precedes wheat, which is generally sown on what is here termed clover sward, and applied to land occupying clover, after having been grazed one whole summer, and in the autumn broken up for wheat. Fallowing is practised.

MANURES.

THE principal manures are, the production of the stable, farm-yard, and lime kiln, judiciously applied by good farmers, according to the respective qualities of the soil; the latter of these, however, is generally spread over the land without any previous mixture, a habit which requires regulation. Horn-shavings, leather-shreds, ashes, soot, and offal salt from the works at Droitwich, are likewise used. By some, more attention has latterly been paid to making dung-hills, than formerly: soil obtained from ditches, and marl, where opportunity offers, are added, and these are frequently mixed, by turning them together.

INSTRUMENTS OF HUSBANDRY.

THE plough is said to have undergone considerable alteration within these last twenty years. The one in general use, at present, is the hammock plough. Of such as are peculiar to the county, the double plough, which is said to be a native, is still confined to the lighter soils, to the north. A second, is the string plough, composed chiefly of wood; its beam crooked, body long and weighty: this, as far as relates to general use, is now almost exploded; it is, however, still found convenient on the deep red soils intended for hop-grounds, on the Teme side, which are prepared for that purpose as follows:—Two of these ploughs, with a man and boy to each team, are employed, following each other; in every other respect the same, they are differently furnished with iron work; the first, which takes off the sod from two to four inches deep, has the wing (here called the feather) of its share extended, and formed into an edge, which terminates with its point on the right hand side; in this position, it separates the upper from the under roots of the grass. In this plough, particular attention to the edge of the coulter is also paid, that the undermined turf may be so regularly cut, and equally divided, on the surface, as to afford the shield-board, which follows, an easy opportunity of raising it on its edge, and then laying it flat on its back in the furrow—in that which follows, both the share and coulter resemble those which (here) are in common use, with the point of the former tending a little downward; this following, raises the soil from a considerable depth, and covers the whole. A third, is the large straight heavy plough, more especially peculiar to the Vale of Evesham; rather long in the body, and without wheels. On the Cotswold Hills, a plough with one wheel is seen, much on the same construction as those met with in Devonshire, and other western counties. At Cuts-

den, considered as part of these hills, oxen are worked two-a-breast, a circumstance which seldom occurs in this county. Most of the modern improvements are partially adopted on the lighter soils, but cannot be considered as making very rapid progress towards a more general use. From the number of heavy horses employed, particularly with the hammock plough, a very fair inference may be drawn, that there is great room for improvement.

The harrows are on the usual construction ; the waggons and carts are remarkably heavy, those on the Cotswold Hills excepted, which are considerably lighter.

The sickle for cutting wheat, is said to have been introduced about the year 1750 ; it is now in general use. The husbandman's tools, on the whole, seem to require much alteration and improvement.

SEED-TIME, AND HARVEST.

THE seed-time for wheat, varies, from the beginning of October to the end of December—for barley, from the middle of March to the beginning of May—pulse, the latter end of February and beginning of March—winter vetches, the latter end of September ; those for summer, March, April, and beginning of May ; the former are generally found to answer best.

The harvest season, is from the last week in July to the end of August ; but the fickleness of the weather frequently drags it on to a greater length.

INCLOSURES.

THE lands are in general inclosed : here are, however, some considerable tracts in open fields. The most extensive

are in the neighbourhood of Bredon, Ripple, and to the east of Worcester. The advantages from inclosing common fields, have been evidently very considerable ; some few objections have been started, but they do not appear, on the whole, to have considerable weight : the rent has always risen, and mostly in a very great proportion ; the increase of produce is very great, the value of stock has advanced almost beyond conception ; in one parish alone, where the quantity inclosed has been pretty considerable, it is stated on unquestionable authority, to have amounted, in sheep and wool only, to full 1000l. a year. The improvements that may be made in stock in general, if properly attended to, are too obvious to be insisted on : it may be said in general terms, that there is but one opinion throughout the county on this subject ; indeed it is in inclosures alone, that any improvement in the line of breeding in general can be made.

The average size of the inclosures, is from fourteen to twenty acres, but varying considerably according to the size of the farms ; the greatest part of the old inclosures is under this estimate.

The new fences are chiefly made with hawthorn, secured by post and rails ; on the Bredon and Cotswold Hills they are of stone. The expence of making them is difficult to judge of with accuracy ; but from the supply of materials, which are in most parts plentiful, it may be deemed moderate.

If a doubt is admitted, whether inclosures increase or decrease population, it must depend in this, as in other countries, on the nature of the land inclosed. Where waste land is inclosed, it must obviously increase population ; there can only be a doubt, when the question arises respecting common fields. The inclosures in this county have been chiefly of the latter sort, and yet the population is admitted to have increased. Considerable inclosures have been made of late, some by authority of Parliament, others by mutual consent of the parties interested in them ; more would certainly take place,

place, were it not for the expence which attends the procuring Acts of Parliament for that purpose. A division of some of the common fields and meadows is under consideration.

WASTE LANDS.

THE waste lands in this county, contain, at a very low computation, from 10 to 20,000 acres : the medium 15,000. They are in general depastured by a miserable breed of sheep, belonging to the adjoining cottagers, and occupiers, placed there for the sake of their fleeces, the meat of which seldom reaches the market, a third fleece being mostly the last return they live to make.

Most of the common, or waste land, is capable of being converted into tillage of the first quality ; of this description, Malvern Chase, extending some thousands of acres, and enriched by the soil and manure washed down from the extensive sheep walks on the adjoining hills, and above all, well supplied with the waters of their numerous springs, stands foremost ; nor is there in this county (rocks excepted) a part not accessible to the plough, but would produce most excellent timber. As to the present mode of commonage, it is so radically bad, as not to admit of improvement, without a total alteration.

LABOURERS.

THE hours of labour are, from six in the morning to six in the evening, during the summer ; in some parts, they are from five till seven, with a proportionate increase of pay :— in winter, from day-break till the close of the evening. During the harvest months, there are no fixed hours of beginning, c

ning, or leaving work. The average price of labour, with drink (beer, cyder, or perry), is a shilling a day, or fourteen-pence without, at the choice of the person employed. A true idea of the expence of furnishing drink, will not be formed from the proportion the two prices bear to each other, or from what is usual in most other parts: two gallons a day is now pretty generally considered as the fixed allowance to each man. In the harvest months, there is no restriction. In extenuation of this abuse, it is said that a part is taken home to the families; but this, when it happens, may be set down as an exception to general custom. Hired servants have the same.

The price of labour, mentioned above, is to be understood as that of common day-labourers: those who are qualified to undertake, and are entrusted with the care of any particular part of the business, such as the management of feeding cattle, or the care of sheep, receive from ten to twelve shillings a week. Women have six-pence with, or eight-pence without drink. The price of piece-work varies in different parts of the county; the customary daily wages being the rule by which it appears to be regulated. The yearly wages of an able man servant, are from 5*l.* to 7*l.* a year, exclusive of diet, washing and lodging; some few, and those chiefly such as are entrusted with the care of the team horses employed on the farm, receive from eight to twelve guineas. Women servants, from 50*s.* to 4*l.*

DRAINING.

TAKING the county at large, and considering its advantages in that respect, draining is certainly very much neglected. All the principal farmers are, however, now convinced of its great use, and several have, within the last
twenty

twenty years, attempted something in this way; but for want of further information, and a proper discrimination of the nature of the land, and above all, from the little attention paid to the situation and course of the springs, many have not succeeded so well, as by their exertions they deserved to do.

In speaking of under drains, it may be thought right to mention, that various experiments have been made at Ewell-grange, the seat of the Earl of PLYMOUTH, and in that neighbourhood; but that by boring (after ELKINGTON's method) deserves to be most particularly noticed, which indeed in such situations (*viz.* low, fenny, or boggy lands), seems to supersede the use of every other. The drain to be bored in, is thus made:—the trench is begun almost level with the surface, in that part from which the water can be most certainly and conveniently carried off. In determining its direction, great attention is paid to the situation of the bogs, and to the rising grounds (or perhaps pools) from which they (the bogs) are likely to proceed; the trench is then continued on, varying from a dead level only so much as may be of service in promoting the discharge of the water; when sufficiently advanced into the piece to be drained, an attempt by boring is made, to discover the spring; if successful, and the water is judged to issue in a proper quantity, this part of the business is completed; otherwise the trench (or its necessary branches) is continued on, and the boring repeated at intervals, till it succeeds. The drain is formed of brick made for the purpose, called gutter brick. The brick, the pebbles, and the faggots, which form the drains, at the bottom of the trenches in which they are used, are covered in the usual manner with earth. Some of the old under-ground drains are also made with brick; others with small pebble stones, where they are in plenty; and some, with small faggots of brush-wood.

Of the open drains, that made use of at Croomé, the seat of the Earl of COVENTRY, is the only one deserving notice;

for a description of which, and an account of the great success that has attended it, reference may be had to Mr. Darks's answers to the queries proposed by the Board (see the Appendix, No. 2), in which many interesting remarks will be found, which do credit to their author.

PARING AND BURNING.

IN Worcestershire, paring and burning has not been much practised, at least, not sufficiently to form a decided opinion of its utility, as it is not by the advantage gained in the crops that immediately succeed, we ought to judge of its permanent use. It has its advocates here; but in Devonshire, where the experiment has been very fully made, on an extensive scale, it is almost given up. A distinction when it will be useful, and when otherwise, may perhaps be made—when old lands are first broken up, on which much is found that will not readily decay, the advantage is obvious; in other situations, it may occasionally be used, though that should be seldom. The frequent practice must undoubtedly, by wasting the soil, prove prejudicial.

WOODS, &c.

THE extensive woods and forests of this county, so very considerable in early times, have almost disappeared. Feckenham Forest has sunk entirely under the continued demands of the salt works at Droitwich; these, however, having been worked for years with coal, that demand ceases. The woods of Hagley and Uffmore, are still of considerable extent, and some idea of the former abundance may be formed as yet, on those parts which border on Herefordshire. Through a considerable

siderable part of the county, small tracts of woodlands are frequent, and they furnish timber, chiefly oak and ash, with some beech, of excellent quality. The hedge-rows are every where crowded with elm, and though the present custom of lopping and pollarding must certainly injure their growth, they often produce timber of considerable dimensions. Elm is considered as the principal growth; there is, however, in many parts, as fine oak and ash as the kingdom produces.—The principal uses peculiar to this county, to which the underwood is applied, are hop-poles, and the making of charcoal for the iron works.

The smaller tracts of woodland are chiefly inclosed, and under the management of the proprietors; some of the larger are thrown open, after a certain number of years from the last cutting; and the freeholders claim the privilege of turning in horses, horned cattle, &c. The injury this practice must do the young timber trees, is very great; nor can the advantage to those who claim the privilege, in any degree be thought to compensate it.

PRICE OF PROVISIONS.

PROVISIONS of all kinds are more than doubled in price within the last forty years; and the same causes which have produced this rise, still continuing, there is little prospect of their becoming cheaper. A very principal one, is the great increase of manufactories in this, and the adjoining counties, more particularly those of Warwickshire and Staffordshire. A second, and perhaps of equal consequence, is the encroachment luxury has made on the mode of living of the inhabitants in general, from which even the farmer is not exempted. There are employed every week, on an average, from twenty to thirty horses, in conveying the productions of the butter

and poultry-market, from Worcester alone, for the consumption of Birmingham and its neighbourhood, besides what is procured from the markets of Droitwich and Bromsgrove. Those employed in carrying vegetables, and other produce, raised by the Evesham gardeners, are still more numerous. Provisions are not, however, on the whole, particularly dear, the certainty of a ready sale, being a sufficient inducement to most of the farmers on the confines of the counties of Gloucester and Hereford, to give a preference to this market; where the average price of butter in summer is nine-pence per pound, in winter, twelve-pence; good family cheese is seldom under five-pence; beef, those parts which are more particularly called for by the labouring part of the inhabitants, may in general be had in quantities, from three-pence half-penny to four-pence, and mutton four-pence half-penny; veal, for a considerable part of the season, four-pence, and sometimes under. The price of wheat (at Worcester, where the measure is eight gallons and an half), with all the other productions of the corn-market, have varied very considerably within the last seven years; at present, many of the articles run remarkably high: the price of wheat 7s. 6d. to 8s. 2d.; barley 4s. 6d. to 5s.; oats 3s. 6d. to 4s. 6d.; horse-beans 6s. 2d. to 7s. 2d.; pease 6s. 10d. to 7s. 4d.; malt 7s. 6d.; hops of the best gathering 3l. 10s. to 5l. The price of cyder and perry is extremely fluctuating. It is necessary to remark, that each town has its peculiar corn measure, and the price varies accordingly; the Worcester bushel is said to be the least.

ROADS.

THE public roads are, in the greatest part of the county, good; in most, tolerable, and every where improving. As much cannot be said altogether of the parochial roads; these, however,

however, are also improving daily. Where new ones are made, the much approved method of rounding them, is generally adopted; in some parts, from the badness of the materials (a soft stone), and in others, from the heavy debts already contracted, the progress cannot be every where equally rapid; but these, and every other obstacle, will probably give way to the general spirit of exertion that is gone forth. The county, in this particular, is much indebted to some of its leading characters; and, it is presumed, their example in this, as in several other instances, will in time have its full effect.

Road Club.—The laudable exertions of the society of the Vale of Evesham, for the improvement of the road in their neighbourhood, must be noticed.—They have the pleasure of seeing their district assume a new face under their auspices; and instead of its being studiously avoided, as formerly, from the inconvenience, and even danger of travelling, they have now to congratulate themselves and the public, on a very safe and pleasant communication. An agreeable embellishment, if it may not be called improvement, and not very expensive, is the practice they have adopted, of affixing the name, on some conspicuous place, at the entrance of every village. The regulations of this very laudable institution, will be found in the Appendix, No. 4. Similar establishments, followed up by the same perseverance, would undoubtedly be attended with similar success. One circumstance does not appear to be in general sufficiently attended to, viz. that ditches on the side of roads, unless they are kept clean, and the water has proper vent, do considerable injury, if the water is suffered to stagnate in them. Where possible, it is advisable to keep them quite dry.

FARM HOUSES.

It appears to have been formerly a very general custom, to build farm-houses in low situations; undoubtedly for the convenience of water. Most of the old buildings continue in such places; and as it is but seldom that the whole require to be rebuilt at once, it will probably be some time before they are in general extricated. The inconveniences, and even losses, are however so great, that no small saving can counterbalance them. It cannot be necessary to point out to those who are interested in this subject, what they are, nor the advantages of removing their buildings to more elevated spots, and where the land will of course be sounder. One circumstance, however, as not being so immediately connected with the general system of this district, it may be right to mention, and that is, the opportunity obtained, of conveying by rain, melted snow, or streams, naturally descending from the still higher grounds, in winter, the most valuable parts of the manure produced in the farm-yard, over the adjoining lands; an acquisition, the importance of which is not easily conceived by those who have not seen it practised. Some of the old farm houses are well built, and convenient; most of the newly erected ones have the same advantages, and are in general well situated; some of which may be said even to grace the county, and as such, may be classed with its greatest modern improvements.

A great deficiency in the offices of the middling and lower sized farms, is the want of sheds for cattle in winter: besides the quantity of fodder they destroy, and the mischief they receive, from being exposed to the inclemency of the weather, it is not unusual to observe many acres round the yard, very materially injured by their constant treading. This grievance, particularly in the low situations so frequent in this, and many other counties, is certainly of such consequence, as to de-

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LEASES.

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may be supposed to be able to manure properly with the produce of the estate ; to spend all the hay, straw, green fodder, and dung, on the premises ; or if hay or straw are sold, to procure a proportionate quantity in return, and to leave the farm in a proper course of husbandry. These are the general clauses by which the tenant is bound. Others, in some instances, are introduced, adapted to the peculiar circumstances of the estate, but they are not such as can convey general information.

That leases, and those for a long term, must tend to the improvement of agriculture, is the opinion of the occupiers in general, and of many proprietors : where any considerable improvements, such as draining, watering, marling, planting, &c. are to be made by the tenant, *they are absolutely necessary* ; and it appears the objection on the part of the landlords might be remedied. That state of independence in which a long lease is supposed to place the tenant, is no longer a grievance, when he does his duty by the farm ; it is from the negligent or dishonest occupier alone, that any thing is to be apprehended ; and, *could the present tedious and expensive course necessary to eject the tenant, not complying with the conditions of this agreement, be altered, and the proceedings be conducted in a more summary way*—perhaps by a verdict of twelve neighbours, before an adjoining justice—this difficulty might be wholly removed. Those misunderstandings also, which arise where nothing dishonest is intended by either party, would be greatly diminished, were the simple language of common conversation introduced, instead of the present circuitous and intricate language of the law. The difficulty and trouble of framing leases adapted to the peculiar circumstances of each farm, would not, perhaps, be found so great, as at first sight they may appear to be : one form, drawn up by a person well acquainted with the business of a neighbourhood, might, with little variation, serve a considerable district. The principal source of this objection seems to be this, that
leases

leases are, in general, drawn up by professional gentlemen, who, having but few opportunities of more minute information, are under the necessity of copying from those who have gone before them.

As no sufficient evidence has been hitherto adduced, to establish the principle, that fallowing is not necessary to secure a continuation of full crops, the clause, obliging the tenant to fallow a due proportion of the tillage, is certainly a very necessary one, on the part of the proprietor, and will in time be found equally advantageous to the occupier. To fix an absolute rotation of crops, must subject the tenant to inconvenience, and occasionally, considerable loss. The number of years for which the convertible land shall be grazed, may be fixed with more precision; but even by this, from the uncertainty of the seasons, he may be liable to considerable injury.

MANUFACTURES.

THE principal manufacture of this county, is that of gloves; carried on chiefly at Worcester. It employs a considerable number of men, and a much larger proportion of the working women and girls of the city, and county round to the extent of seven or eight miles, from the age of eight or nine, and upwards. Any calculation of their number, must be extremely vague; it is, however, at a certainty so great, as to be severely felt through the neighbourhood.

The hands employed at Worcester, in the china, and carpet manufactories, are not very numerous; those employed at Kidderminster, in the latter business, are considerably more so. The carpet manufactory may be properly considered as a part of the œconomy of that town and neighbourhood. On the confines of Warwickshire and Staffordshire,

many of the lower class are employed in the manufacture of nails ; others, in that of needles and fish-hooks.

The manufacture of salt at Droitwich, is chiefly deserving notice, from the immense revenue, compared with the size of the place. It pays annually to government, the lowest average, about per ann. That of glass, at Stourbridge, is very considerable, and employs many hands. There are also some iron works and collieries. Upon the whole, though this county is far inferior in its manufactories, to some of the adjoining ones, the numbers engaged in this line, bears no small proportion in that of its inhabitants ; and their effect on its markets, and the value of the landed property, must be very great ; nor does there appear to be room to doubt, but that they have uniformly operated to the advantage of agriculture*. They are often said to have increased the poor-rates ; perhaps they may, in particular instances, but when considered on a larger scale, that will not, probably, be found to be the case. Had the present custom of abolishing cottages and small farms, prevailed to the same degree it does now, what would have become of one half of the former inhabitants of the country, if our growing manufactories had not received, and supported them ? Either the population of the country must have sunk, an evil which God avert ! or the price of labour must have been reduced so low, as to have been scarcely adequate to the support of the labourer.

COMMERCE.

THE produce exported, is chiefly fruit, cyder, perry, and hops ; a considerable number of fat cattle, sheep, and hogs,

* One great effect which manufactures have upon agriculture, is that of raising the price of meadow land ; and hence much arable land is necessarily converted into pasture.

are also sent to London, and the large manufacturing towns of the counties of Warwick and Stafford. The quantity of wool is estimated at two thousand packs, of 240lb. each, value from 10l. to 16l. per pack. But the principal source of wealth, in its commerce with the different parts of this, and other countries, arises from its fruit, perry, cyder, and hops. The former is now growing into an article of considerable consequence, and deserves particular attention, more especially as the demand for it in the large manufacturing towns of the north, and all the intermediate country, increasing yearly, promises a certain and ample recompense for the greatest exertions that can be made in this branch of its rural œconomy. Some idea may be formed, from the following circumstances, of the quantity exported, and the price it bears. The average tonnage of fruit sent by water into the north, for the last three years, amounts to fifteen hundred tons; (in the year 1791 it exceeded two thousand and ninety-four tons), each ton weighing equal to fifteen horse pots, the measure by which it is commonly sold, making twenty-two thousand five hundred pots. The pot holds about five pecks.

The fruit sold in Worcester market, is allowed to amount to (and the circumstance is fully confirmed, by the rent given for the toll paid on it) one thousand pots per week, on an average of the last five months of the year.

In ascertaining the value of the produce, as an article of commerce, the two preceding months may be safely included; for though the number in these certainly falls short of this estimate, the superior value of the early fruits will amply compensate for the deficiency. Seven months, or thirty weeks, at one thousand pots per week, give thirty thousand—supposing one half of this quantity to be sent by water, and making part of the home consumption, there will remain fifteen thousand pots not accounted for in the estimate of the water carriage. Under these two heads, some part,

the produce of Herefordshire, is included, perhaps an eighth of the whole ; which, when deducted, leaves the number twenty-eight thousand one hundred and twenty-five pots. Not more than half the produce in this line exported, is supposed to pass through Worcester ; allotting, therefore, to the markets of Bewdley, Kidderminster, Bromsgrove, &c. &c. and the rest of the county, north of this city, thirty thousand pots, the whole amount may be fairly estimated at fifty-eight thousand one hundred and twenty-five pots. The price varies considerably, from three shillings to six shillings the pot, and some of the inferior sorts, under. Four shillings is deemed a low average.

The quantity of cyder exported, as far as can be collected from the opinions of several principal planters and merchants, may amount to about ten thousand hogsheads, of one hundred and ten gallons ; the average price for about ten years past, 3*l.* per hogshead, as it is delivered from the planter to the merchant. The delivery is often a circumstance of considerable consequence, as they frequently live ten, twelve, or fifteen miles apart. That is the price of the greater part of the cyder sent out of the county ; there are some few particular sorts, such as styre and golden pippin, which bring from 7*l.* to 10*l.* per hogshead ; the quantity of these is not very considerable. The quantity of perry falls short of that of cyder, perhaps it does not reach one-tenth ; but little is exported except the prime sorts, such as the real jaynton, squash, huffcap, &c. these bring from 4*l.* to 7*l.* per hogshead.

The number of acres in the county, planted with hops this year, is 5988. The lowest average, places the produce, at six cwt. per acre ; the lowest average price above 3*l.* 3*s.* Calculating upon these low estimates, the whole may with much probability be stated with the exports.

BENEFICIAL PRACTICES.

THERE are few peculiar practices in this county. The rolling pasture and seeded lands with large heavy cast iron rollers, is not observed in the adjoining counties, nor is it indeed very general in this. The advantages, however, where used, are very conspicuous, more especially on land that has been drained, that which is liable to be much trodden with heavy cattle, or is naturally disposed to be spungy. It has been also used on new seed land, with success. This practice cannot be applied in many situations: it is on the lighter dry soils where it is most useful, and even on these due attention must be paid to the seasons, and other circumstances. In several parts, the setting of beans by line, is practised, and found to succeed better than any other method yet attempted. The drill husbandry is well known, and is said to suit best the lighter soils. Dibbling wheat has been also tried on a small scale, and is said to answer; but at present, it does not appear likely to become general. The cyder mills of this county and Herefordshire, are infinitely superior to those of Devonshire, and if introduced there, would certainly be a valuable improvement. The advantages thence to be derived, will be more particularly pointed out, when that part of the business of the county comes to be considered*.

* The plough originally constructed in the Vale of Evesham, already mentioned, it is believed, might be adopted in other countries with advantage. It takes off the turf from any green land, about one inch and a half thick. The turf falls in the last furrow, so as to be totally buried by the mould, which is afterwards raised by another plough in the same beam; and by this mode of cultivation, the land can be harrowed almost immediately, which otherwise would not be well broken by two or three ploughings. There are certainly many parts of the kingdom, where this plough would be of use, when strong leys are ploughed up.

AGRICULTURAL SOCIETIES.

THE only society which has in view the promotion of agricultural improvements, is the Vale of Evesham Road Society. The narrow principle, which considers information in rural management no longer valuable, when generally known, though still to be met with in many above the lower class of occupiers, is gradually making way for more liberal sentiments. The nobility and gentry of the county, are uniformly communicative, and disposed to give every assistance in their power to diffuse knowledge, and to countenance and promote improvements ; whatever alterations are proposed, are candidly attended to by all ; and though the fear of disappointment in quitting old established customs, may long rivet some of the tenantry to their present errors, the success of those who dare judge and think for themselves, and who act in consequence, must in process of time remove them.

ON THE INCREASE OF POPULATION.

THE improvement, of all others, most likely to promote the welfare of this, and every other part of the kingdom, is that which shall tend to increase its population. Either the necessary labour on the land already in a state of cultivation, must be diminished by superior management, or the number of labourers increased, before the most important improvements in contemplation can be effected. It is sufficiently evident, that on this last point the principal dependence rests. How shall it be accomplished ? Manufactures have a natural tendency to promote population, by enabling men early in life to support a family. Many circumstances, however, concur

to defeat it. The unwholsomeness of many of the employments in this line, and the general unhealthiness of the dwellings of the greater number of the labouring part of the community, engaged in manufactures, it is feared, more than counterbalance that advantage: it were well, did they support their numbers without any further demand upon the country. The same disadvantageous circumstances affect, the lower class of the inhabitants of large towns in general. These have been termed accordingly, and with too much truth, the grave of the human race. It is from the country alone, we can look, with well grounded hope, for this greatest of blessings; but here, from the disproportion labour bears to that of the necessities of life, and the high rents required for the few remaining cottages; eight or ten years, the most valuable of a man's life, in this point of view, are lost to the community, before he can settle, with any prospect of supporting a family: it is even well, if, after so many years servitude, he has saved sufficient to provide the few necessities of his cot, and has some little reserve left, for the first extraordinary emergencies that may occur. It is to those of large fortune, and great influence, we must look up for this essential service to their country; and great indeed, will be the merit of those who shall devote those advantages, with which providence has blessed them, to serve the common cause in that most essential point, the increasing its population. A civic crown was formerly decreed to him who saved the life of a citizen—what adequate recompense can be adjudged to him who shall be the means of adding many?

PRODUCE.

THE average produce of the tillage, bespeaks ample room for improvement, on land equal to any the kingdom can boast, the

the highest seldom exceeding twenty bushels of wheat per acre, and falling frequently under fifteen : the average of the county at large, cannot be placed so high as fifteen—barley twenty five bushels on the poorer lands, up to forty five, as they improve ;—oats and beans about the same ;—pease very uncertain. The deficiency of the crops, considering the advantages of the county, is notorious ; to account for it, would be rather an invidious task ; something, however, may be suggested, and it is hoped, without offence.

In the hop districts, these most certainly engross too much time and attention ; the plantations run away with the greatest part of the manure, whether home made or bought ; and the hop planter, looks down on the other branches of husbandry, as a sort of secondary business, deserving but little notice, when put in competition with his darling hops ; and what is rather extraordinary, though no one wishes for a general full crop, every one exerts himself, and strains every mean to procure one for himself. In the parts that are well fruited, too much dependence is also placed on this very precarious article : thus, advantages which, with an adequate spirit of exertion, would prove of the greatest benefit, are, in these instances, nearly lost.

FOUL SALT.

THE brine pits of Droitwich afford a manure, and in such quantities, as would deserve attention, were it not for the tax laid some years back on foul salt. This now acts almost as a prohibition ; its usefulness has been fully ascertained, when used judiciously. There are those in the neighbourhood, who, after considerable expence, prefer it to most others, and employ it, though subject to a tax of 4d. per pound on the spot. No argument against it can be drawn, from the effect which the constant draining from the banks of

the Droitwich canal (often very highly impregnated with it) has on the herbage immediately adjoining, no more than from any other injudicious excess, which must always be detrimental.

MARL.

RED and grey marl is found in most parts, and its use as a manure is now pretty well known, though it has not been so generally introduced into practice as it deserves. On the light sands on the north, mixed with dung, and on the stronger soils, with a due proportion of lime thoroughly incorporated, it will probably be found one of the most useful that can be obtained. A method of washing marl over watered lands, has been employed in one instance in Devonshire; and should the latter improvement be more generally adopted in this county, the former may in many instances be introduced, with but little additional labour and expence. The general principle of conveying the water over the land, is the same in both. Where marl is found between the source from whence the water is obtained, no large quantity is necessary; and the part to be watered, is broke up in summer with the plough; and when sufficiently slacked, by exposure to the sun, or if in winter, by frosts, the water is directed near it, whilst a man throws into the stream what quantities of pulverized marl is judged necessary; and is thus conveyed over the whole surface of the land, with an accuracy scarcely to be conceived by those who have not witnessed it. The only precautions necessary, are the employing it on land for which the marl will be a proper manure, and not conveying so much at once as may endanger the herbage.

TILLAGE AND FALLOWING.

THE plough is generally observed on the fallows after rains, when the land is said to work well ; the great error of dividing the roots of weeds, at the time the smallest parts are almost sure to vegetate, is overlooked, and heavy indeed must be the rain that drives them home, when the team has nothing else to do. What is here said, cannot be supposed to dissuade from going over the fallows frequently, but to inculcate one of the most certain truisms of good husbandry, that one ploughing in dry weather, is of more service than all that can be done in the wet.

FLAX HUSBANDRY.

IF the growth of flax was more generally introduced on the middle soils of this county, much advantage might be derived from it. The prejudice under which it labours, has been noticed, and may render the following instance of the benefit to be gained from it, not unworthy of attention. On part of an estate held by the life of a very infirm man, after it had been almost wholly exhausted by successive crops of corn, flax was sown, as a last resort—it thrived well, the invalid lived, wheat was tried again without manuring : the crop on it proved equal to any of those formerly gained after a moderate dressing, The unexpected success of this first attempt, induced the holder of the property to make farther trial of it ; and such has been the uniform advantage arising from it, that in a very considerable district of the county of Devon, flax is now very frequently adopted as a very useful and lucrative shift crop ; but before this can be generally practised here, the high ridges must come down ; cross har-
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rowing the land being absolutely necessary, to bring them into a fit state to receive the seed.

PONDS, AND DRINKING POOLS.

THE giving cattle clean and wholesome water to drink, is seldom so much attended to as it ought to be. More attention is beginning to be paid to this important article, at least in Worcestershire. A new pond has lately been invented, which is usually situated where the corner of four grounds meet. The pond should be made about twenty yards square, ten feet deep in the middle, and sloping on all sides. As a security for the water not running out, it is generally puddled, or secured with clay, over which must be thrown loose stones, or soil, and afterwards a pavement. The pond will fill by the rain in winter, and be replenished by the fogs during summer.

More attention also, ought to be paid to the water given to cattle in the fold-yard, which is in general impregnated with all the filth that issues from the surrounding dung-hills.

IMPROVEMENT OF STOCK.

THIS county is by no means deficient in emulation, with respect to stock; and though it is not pursued with all the enthusiasm observable in some others, it is perhaps conducted with more skill than in most; but this must be understood of the superior managers. One mistake, and that a very capital one, has been noticed more than once—the attempt to introduce a larger breed than the nature of the soil will admit. After all that has been done and said on this subject, the real principle of improvement consists in suiting the stock

to the soil. Sheep, of the best and most fashionable breeds, are in the hands of several gentlemen ; and various crosses have been made, and some beautiful and fine stock has been produced. On the commons and open fields, there is the greatest room for improvement ; this, however, under the present management, is impossible. The cattle of the country, are chiefly bought in from those of Hereford, Stafford, and Gloucester. Those that have been bred, in general, are a mixed breed, without any particular improvement in view. Some few have now turned their attention this way, and the experiments are in judicious hands, such as will spare neither expence nor care, in perfecting them. Were more oxen introduced into the working stock, it would undoubtedly, be a very advantageous improvement. One objection of some weight is this, that they cannot be worked in yokes, upon the declivities of the present high ridges ; and the harness necessary for them, worked in length, is very expensive ; but this will be done away when the ridges are lowered. Their advantage to the owner, in point of keep, expence, and other circumstances, is obvious ; it may not, however, be superfluous to add, that in those parts where they are in general use, they are preferred by the graziers. They are worked till they are six years old ; they usually begin at the age of two or three.

IMPROVEMENTS SUGGESTED.

IN considering the more immediate improvements of which the present management of this county is capable, the first thing that strikes even the most superficial observer, is the value of its waste lands. The converting of these, whether into convertible tillage, plantations, or inclosed pasture, must of course depend on their peculiar circumstances.

The great point to be enforced, has certainly been but little attended to, in those inclosures which have already taken place—it is, to consider, in portioning out the land, the convenience of draining and watering; the trouble and expence of which will be much curtailed, if these most material objects are sufficiently considered in the first demarkations; but few instances can occur, where the ditches for the necessary fences, may not be made useful drains, and in many, the only ones needful to carry off superfluous water. And there can be but few large tracts, a considerable part of which may not be allotted to pasturage, capable of receiving the benefit of watering. Should the meditated inclosure of Malvern Chase be carried into effect, the fairest opportunity offers itself, of procuring to the several allotments those inestimable advantages. It has been already hinted, how capable the greatest part of this county is of these improvements. A first step to this, however, must be, the clearing the natural primary drains, the water courses, the small brooks and rivulets; these are in general much neglected, and from their foulness, the water becomes in some measure stanked up, and continues at such a level, as prevents many of the smaller natural drains from emptying themselves. The custom also, of planting on the sides of the brook, and continuing the accidental growth on their banks, contributes much to this injury. The natural meadows, which are here of very considerable extent on the course of the large rivers, suffer much from this neglect; subject to be frequently overflowed; they are also drenched in heavy rains, with the water from the distant high grounds; and as the immediate banks of rivers are always above the level of the lands adjoining, the water, on both occasions, is continued on them so long as to injure them considerably. Open drains, to carry off the flood, and a sufficient water course, to receive and convey the torrents from above, to their natural destination, would prove a certain remedy to this evil.

The planting of timber, is another principal improvement this county is capable of ; and as it is but just emerging from that neglect in which it has lain for a long time, the examining any of the prejudices that have contributed to it, may still be useful. The charge of want of exertion, which in most instances of neglect in rural business, attaches to the tenant, in this, lies wholly at the door of the landlord. The very distant prospect of a return, has undoubtedly great weight, but this, with proper management, will be done away, as a return of 20l. per acre may be reasonably expected from the underwood, &c. in twenty years, equal to an annual rent of 15s. per acre ; and this frequently, on land which in its present state, or under any other management, would produce little or nothing. Along the banks of the Severn, more especially to the north of Worcester, many small, and not a few, pretty considerable tracts of waste land, are met with, which seem, by every advantage that can occur to encourage plantations, to invite the industrious hand of the planter. On those few spots where accident or industry has raised timber, it is of the finest growth, and first quality. On the banks of the Avon, or at no great distance, similar situations are to be found. They are more frequent on those of the Teame ; and though this river, not being navigable, does not offer all the advantages of the others, it is highly probable that floats of timber might be safely conducted, from any parts adjoining, in the high floods to which it is subject. The neighbourhood of the present canals ought also to be carefully explored, for situations of this description. There can be no doubt, but in process of time, upon this plan, the former abundance of timber might be restored. Were the same idea extended also to the farms, a great inconvenience, now much complained of, would be obviated, the mutilating of hedge-row timber. On most estates, some spots are to be met with, which cannot be so well employed in any other way, as in raising timber and underwood for the

use of the farm. Hedges might then be thinned, without prejudice to the landlord; and the occupier, more particularly those of the old small inclosures, would get rid of a very great nuisance; for such the timber, in its present crowded state, must be to the crops. Where fuel is plenty, as it may be said to be through the greater part of this county, the white-thorn hedge should be more generally introduced, being the cheapest in the long run, and incumbering the ground less than any other. It would certainly be an object well worth the attention of proprietors of estates, more particularly those residing in their neighbourhood, to raise large quantities of these plants, for the use of their farms.

The extreme height of the ridges, is an error that calls loudly for redress; it is wonderful to what a pitch this practice is carried, in all the strong soils of this district, even in the inclosures of modern date; in the old ones, their effects may be traced in the very meadows adjoining the principal rivers. Their inconveniences are sufficiently known; but no where can they be more conspicuous than in the vales of this neighbourhood: after a considerable fall of rain, the Vale of Evesham has in many parts the appearance of a country intersected in all directions by navigable canals; and this on a soil the most retentive of water. There are many parts of the county, in which an alteration in this might be immediately adopted; in all, as soon as the necessary drains can be completed. Other improvements that will follow, are these—lighter, and more active horses, and much fewer in number, will be equal to the business of the district, and the implements will soon shake off their cumbersome make: something considerable has been already done in this way, and more is in contemplation. The methods employed are chiefly these—on pasture grounds the turf is removed, and the centre of the ridge being broken up by the plough, is thrown down into the furrow, and the turf replaced. Perhaps a considerable saving of labour in this method may be
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made, by laying aside the turf of the first ridge, and when this is lowered, covering it with that from the second, and so on till the last, which will receive that laid aside from the first. The turf will then be removed but once instead of twice, which is the case when it is taken off and replaced on the same ground. In other instances, where the land, from a state of tillage, is to be laid down for pasture, the ridge is simply levelled, by removing the soil into the furrows. The success of this method does not appear to recommend it, as it wholly robs the centre of its best soil, and a less fruitful tract points out for years after, the loss it has sustained. In a third, the spade alone is used; and in this manner a trench, some four or six spades wide, is first dug out, to procure room. The digging is then continued throughout two spades deep. The first is thrown into the bottom of the trench, to form the future surface—the second from the bottom is thrown into the furrow, by which means the centre of the former ridge still retains its meliorated soil. The detriment the ridge suffers, from being robbed, in the one instance, and the expence attending the more improved method, being inconvenient to the farmers of confined capital, has induced many, in the inclosures of the Vale of Evesham, to adopt a sort of middle method—a small ridge is thrown up in the former furrow, which accumulating gradually, will, in course of time, bring the general surface something nearer a level. As slovenly neglect is usual in most of the tillage, it is no uncommon thing to observe, in a piece of eight or ten acres, perhaps a sixth part round the boundaries, not only uncultivated, but left a nursery for weeds. Nor is this the only mischief—there is on these parts a constant accumulation of soil, brought by the horses, and different implements employed, from the centre of the piece, and of course it has a tendency to give it a hollow form, of all others the most inconvenient. If, however, the great weight of the plough, or other implement, on their
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present construction, and the resistance of a strong soil, requiring a greater number of horses to work them, is found to render so much room to turn, necessary, care should undoubtedly be taken to remove the accumulating earth, which, when done, and mixed with the other manure, will be found to have contributed the most valuable part of the dressing.

OBSTACLES TO IMPROVEMENT.

IF the payment of tythes in kind, and mortmain tenures, are found obstacles to improvement, might not such obstacles be removed, by a law, enforcing a composition for tythes, to be assessed, not by the value of any particular estate, but by the average value of a considerable district, and re-assessed at different periods; confining the assessment to the value of the land in a common course of husbandry; that is, excluding all extraordinary improvements, such as buildings, plantations, &c. and by regulating renewals of the tenures under the church, in the same manner as the proportion of rent claimed as a fine, being ascertained by the value fixed for the tythes of the district.

The quantity of land still continuing in common fields and meadows, with the strange mixture of property in these, are also considerable obstacles. A general law, and that binding a small minority, by diminishing the present exorbitant expences that attend bills for inclosures, and the execution of them, would perhaps be the most direct means of removing them. The short time for which the tenants in general hold their farms, must also act as a considerable check on their exertions. Could any means be devised, of establishing that confidence between landlords and tenants, which ought to subsist among those whose interest must go hand in hand, a very considerable obstacle to improvement would be done away.

SPRIT OF IMPROVEMENT.

THE lands in Worcestershire, have within the last twenty years been much improved in value, and the farmers in general have a turn for improvement. Even those who are not very earnest about it, *merely for the sake of improvement*, are ready enough to embrace a scheme, in which there is any prospect of advantage. Much, however, remains to be done ; and the following queries, drawn up by an intelligent farmer, in Worcestershire, are well entitled to the attention of his countrymen.

QUERIES RESPECTING THE IMPROVEMENT OF
WORCESTERSHIRE.

Whether turnips, and cultivated grasses, might not be more cultivated, and with great advantage ?

Whether turnips ought not always to be hoed, and kept clean ?

Whether marl might not be more advantageously managed, and more generally used ?

As the hop-grounds are of great consequence to the farmer, whether more labourers ought not to be employed in cultivating the hops, as well as other parts of the farm ; for, without a sufficiency of hands, either the one or the other must be neglected ?

Whether the pasture grounds should not be cleared of the alders, and ash plantations made, and properly inclosed, on every farm, according to its size ?

Whether the fallows do not follow each other too frequently ?

Whether potatoes ought not to be more cultivated ?

Whether beans ought not to be sown in drills, instead of broad-cast ?

Whether improvements in stock, ought not to be more generally attempted ?

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Whether more cottages, for labourers, ought not to be built?

In regard to exciting a spirit of improvement, *premiums on produce*, although approved of by many, are not, perhaps, the best judged rewards. Land being of such different value, some worth ten shillings, and others worth thirty shillings, and even upwards, all hopes of a prize, would be given up by ninety-nine people out of an hundred, unless they were to rob one part of the farm to enrich a particular spot. The present high prices of grain, is undoubtedly a strong temptation to exertion; long leases would be another incitement, for few people will spend *much* on another person's land, unless from the hopes of being amply reimbursed, in consequence of their possessing an interest in the land for some years to come.

Having laid before the Board these general observations, on the agricultural state of Worcestershire, I shall now proceed, to treat more in detail of those two important productions, *hops* and *fruit*, the culture of which, is confined to this, and a few other districts in the kingdom, and consequently requires more particular attention; beginning with hops, for which this county is deservedly celebrated.

I. OF THE HOP PLANTATIONS.

THE hop plantations of this county are, in general, a pattern of neat and excellent husbandry. A very general and judicious experience, and the most persevering industry, have placed its management, in this particular, on the most respectable footing; and though something may be as yet reserved.

reserved to engage and recompense the future exertions of the ingenious and industrious, it may be asserted with truth, that the peculiar, or more general produce, of no part in the kingdom, has been cultivated with a greater variety of experiment, and emulous exertion, than the hop plantations of this and the adjoining county. The different sorts of this valuable plant, cultivated here, are ranged under three general heads: the red, the green, and the white. A various cultivation, the real source probably of these first distinctions, has introduced a variety of different species, though differing little more than in name and degree, of the same colour, shape, and size. There are two, however, in more particular esteem, both with the planter and merchant; the *Golding Vine*, brought from the neighbourhood of *Canterbury*, and the *Mathan White*, the name of which denotes it to be a native of this plantation, and of the parish of that name. The most hardy, that which will flourish with the least attention, and is least liable to suffer from the seasons, is the red; perhaps the original stock. The next in this line, is the green; which is also the most productive. The tenderest, though at the same time the most valuable, is the white. The plantations of this county are principally to the west of the *Severn*, increasing as they approach the banks of the *Teame*, and the confines of *Herefordshire*. The situations preferred, are a gentle descent, with a south, south-west, or western exposure, screened at a distance to the north and east by high ground, or plantations of timber; but not so as to prevent a free ventilation: the soil, a deep loamy land, or strong clay, after it has been thoroughly limed and manured: but above all, a boggy soil, when completely drained, and duly meliorated, is said to produce the best hops.

When meadow or pasture ground is broke up for this purpose, it is either dug, or the sward, being first pared thinly off by the paring plough, it is buried by the furrow plough, working full ten inches deep. Old tillage, when converted

into hop-grounds, requires to be very completely cleared of woods ; to be thoroughly manured, and to have the ridges, provincially lands, entirely levelled. The different manners in which they are worked, are, the tump, and the ploughed grounds ; the former by hand, and the latter by the plough : those are laid out in the quincunx form, each tump being at the distance of from five to seven feet from the centre of each other. On these, the distance between the stocks, is from three to four feet ; that between the rows, from seven to nine ; the greater or less space being always allowed, as the land is either richer or poorer. In the ploughed, if the circumstances of the ground will admit of it, the rows run mostly north and south, with the view to admit the sun more generally when it has most force ; but should it be long and narrow, its greatest length extending east and west, that direction is preferred : there are those who give it the preference when not influenced by any accidental circumstances, as receiving the morning sun, by which the chill of the night is soonest dissipated. The sets are procured from the shoots, or roots of the stocks, at the annual time of dressing, the latter end of March, or beginning of April. They must have two joints each, the roots striking from that in the ground, and the vine shooting from that above. Four are planted to a stock, at the distance of about four or six inches from each other, all inclining or pointing, so as to meet together in the centre.

There are two methods observed in planting young hop-grounds ; the first and more general is, to plant the sets on the situation in which they are to remain, immediately after they are parted from the old stocks. In the other, the sets are planted in nurseries, in rows about three inches asunder, with about five or six inches between the rows ; here they grow till the month of October, when they are transplanted into the hop-ground. Under this latter management, if the roots are good, one will be sufficient for a stock. In re-
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moving them, great care must be taken to make the opening to receive them so large, as not to confine the roots; when planted from the stocks, a hole made with a peg, to place them in, is all that is required. The nursery has certainly great advantage; besides the saving of a considerable expence, where the sets are to be purchased, the land may be worked through the summer, to prepare it for the plantation. During the first year, the grounds are ploughed, or hoed, provincially kerfed, three times. They produce no hops; but a good crop of pease, beans, cabbage, or turnips, is obtained between the rows. The second year they are poled, and yield half a crop; the third year, they are in perfection. When they have reached this state, the management is uniformly as follows:—They are gone over, mostly four times, with the plough or kerf, beginning about March. The first business is to throw down the tumps, and rows of the former year, and to work in the manure, previously brought on in the winter. This consists of fresh earth, rotten dung, or a compost of dung, earth, and lime, judiciously proportioned, according to the nature of the soil; each acre receiving not less than sixty cart loads, for a good dressing—it is repeated, according as the nature of the land renders it necessary. The stocks are now pruned, the remains of the old vines, and superfluous shoots, are removed with the hop-knife. The second moulds up the tumps and rows; the succeeding ones complete the moulding up of the plants, and destroy the weeds. The tumps are formed round, flat at top, and about twenty inches diameter, and somewhat broader at their bottom. The ploughed lands are thrown up much in the same manner as for potatoes, or beans, only higher, and with more soil. The shoots begin to appear in April, and the poles are pitched the latter end of the same month, or beginning of May. These are set two or three to a stock, at a foot distance from each other, with great regularity and exactness, and inclining a little outwards, over the alleys. Some

attention is necessary, in this part of the business, not to over-pole the plants, either in number, or the length of the poles, as it weakens them ; and by drawing the vine out to too great a length, renders them less productive. About the close of this month, and beginning of June, women are employed to direct the vine to the poles, and tie them with dried rushes. This is continued till they are out of reach. The only care now remaining is, to keep under the weeds, and to go over the plantations occasionally, to replace any vines that may stray, and repair any damage the plants or poles may have received from the weather. When they have reached their full growth, which is, in some measure, regulated by the number and length of the poles, the side shoots put out. The method of topping the vines, to promote the lateral shoots, said to be practised in other plantations, is never used in this.

About the second week in September they ripen, when the hop-pulling begins. In a plentiful year, it continues six weeks, more or less, according to the crop. The cribs are now placed, beginning on that part which lies most exposed to the sun, as being soonest ripe ; one, two, or more, as the proprietor's plantation is large or small, and he has the convenience of kilns to dry them. Each crib has eight or ten pickers, women and children ; they pick, if there is a tolerable crop, and they are any ways industrious, from six to eight bushels each per diem, which is about a sackful (the sack in which they are carried green to the kiln) ; eight of these sacks, when dried, make about one hundred weight ; but in some seasons, though no ways negligent, they will fall short of one half of this quantity. The pickers come from the neighbouring counties ; but the far greatest number out of Wales ; some from thirty and forty miles distant. From the cribs, the hops are conveyed to the kilns, four or five of the sacks alluded to before, at a time, on a horse, and are dried as soon as possible ; they damage considerably, if suffered to lie long together before

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they are put on the kilns. They will heat in six or eight hours, and lose colour ; to avoid which, the kilns are kept constantly employed day and night. The time the hops take in drying, is from eight to twelve hours, according as they are ripe and dry. Great attention, and considerable judgment, are necessary in this part of the business, the whole of the year's expences and labour, and at times property to some amount, being at stake on a single kiln—it is usually entrusted to those who have been long used to the practice. The general principle on which they proceed, is to begin with a very gentle fire, till warmed through ; the heat is then gradually increased, and continued till the core (fruit stalk) is quite sunk and dry. They are then removed, and thrown together in a heap, in a corner of a large room appropriated to this purpose, and frequently turned from one side to the other, in order to cool them completely before they are bagged.

The method of bagging is as follows :—A strong hoop is made fast round the mouth of the sack, which is then let down through a circular opening in the floor, made for this purpose ; a few are first put in, when the man who is principal in this part of the business, gets in, and by constant treading, presses them down as close as he can. A second person is employed in breaking them (that is, tearing the flowers, &c. from the fruit stalk) and throwing them into the bag as they are wanted : thus they proceed till it is full, when the mouth is loosened from the hoop, and closed, leaving at each corner of the sack a space for the hand, for the better convenience of those who are employed in carrying them.

In the ground, nothing more is done, but stripping and piling the poles ; these are always set up in them, about three hundred in a pile, sloping and propping each other, the better to withstand the wind. Different opinions are entertained respecting the superiority of the tump and plough
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management; the former has certainly the advantage in many particulars, and is said to be cheaper and more productive: but as it is impossible, from the present extent of the plantation, that any considerable proportion can be worked in this manner, from want of hands, the enquiry cannot be of much consequence. The expences of these plantations may be calculated from the following statement:—As they always occupy the most valuable tract on the farm, the rent cannot be set down lower than thirty-one shillings per acre, in some instances it is much higher. The acre is not to be estimated as statute measure, but after the rate of one thousand stocks to the acre, which is in general one-fifth less.* The expence of manure is very heavy, as they produce none, except the ashes from the burning of the vines and leaves; so that were justice done to the rest of the land, the greater part ought to be procured from home. The price of dung (provincially muck) in general, is about six shillings per waggon-load, or three shillings per ton; (if from stables, in which horses are fed plentifully with corn, the price runs higher in proportion) and is frequently to be fetched eight or ten miles.

The hop-grounds are worked sometimes through the several seasons, as they are termed, at a fixed price, which is, from fifteen shillings to twenty shillings per acre, according to the different quality of the soil. The seasons are four, and thus divided:—throwing down and cutting, spreading and pitching poles, kerfing and tumping, stripping and piling poles: otherwise the workman receives his usual pay of one shilling per day, with drink; or some parts are taken by the acre, as pitching poles three shillings, stripping and piling two shillings and six-pence to three shillings and six-pence. The women employed to tie the vine receive six-pence per day, with two quarts of drink; or they take them by the year, at three shillings or three shillings and six-pence per acre. The hop pullers receive from six-pence to eight-

pence per day, with a pint of thickened milk, or something similar, for breakfast every morning; two quarts of drink per day, and two dinners every week. The pole-man, he who brings and removes the poles, has all his meals, drink, and from four shillings to six shillings per week. The coal (pit-coal charred) with which they are dried, is also an expence of considerable consequence; it is chiefly procured at Pinsax, in this county, at a distance of several miles from some of the plantations, where it costs two-pence half-penny or three-pence per bushel; twenty-eight bushels are a ton, and it takes two tons of coal to dry one of hops. The drier is paid from twelve shillings to twenty-one shillings per week, varying according to the number of kilns he has to attend: he has also his meals and drink. He who has the management of the bagging, is paid four-pence per hundred weight, exclusive of his assistant. There are different articles used for bagging: the Lubecks, and a sort of cloth manufactured at Dudley, in this county, are the most in use, and chiefly the latter. The price varies according to the demand. The Lubecks are dearest; they cost, in general, from twenty-eight shillings to thirty-four shillings per piece, and are thirty-six yards long, and about thirty-one inches wide. The Dudleys cost from twenty-two shillings to thirty-two shillings, and are of the same dimensions, each piece making eight sacks, four yards and three-quarters long.

Most of the estates which grow many hops, have plantations in which the poles are raised. Ash and barked oak are preferred; but willow, poplar, and alder, are also used. Where the estate does not produce a sufficiency, they are bought at the woods and coppices in the neighbourhood, at from five shillings to fifteen shillings per hundred: their length is from eight to eighteen, or twenty feet, proportioned to the goodness of the lands; they last, with care, seven or eight years. The sets, when bought, cost from six-pence to two shillings and six-pence per hundred. The last ex-

pence is the duty, which is one-penny per pound, and fifteen shillings per cwt. on the produce. The average of the expences in general, is thus estimated: that of workmanship, from twenty-five shillings to thirty shillings per acre; those of picking, drying, charcoal, sack, and duty, thirty shillings per hundred weight. The implements used throughout this plantation are, the plough, the kerf, the spade, iron-crow, and the hop-knife. The plough is the common one of the district; the kerf is a large hoe, with a plate about nine inches broad, and thirteen deep; the spade needs no particular description; the crow is an iron bar, about four feet and a half long, generally square at top, with a large point, in the octagon form, used to make the hole in the ground in pitching the poles: the hop-knife resembles in make the sickle, an old one being often converted to this purpose, by grinding off its saw-edge, and giving it a sharp one in its stead; when made with new mettle, it is something smaller. The crib into which the hops are picked, is an open frame made of wood, standing about four feet high, four feet broad, and nine long. To the upper edge of this, is fastened the crib-cloth, which is nine yards double, made with the same stuff with the bags, but coarser and cheaper. The sacks in which they are conveyed to the kiln, are the same. The kiln will be afterwards described.

When the hop-grounds are come to perfection, it is the general practice to exclude every other growth, and trust to them alone, for a return of the great expence at which they are cultivated. Under this management, those which have been uniformly attended to in their prime, and not weakened by over poling, will continue to produce plentifully from twenty to thirty years; and in some instances, much longer, care being taken to replace the stocks that accidentally decay. On the other hand, fresh grounds are generally allowed to produce the finest hops, and in greatest abundance. A question of some difficulty arises, at what time it will answer:

best to give up the old, and plant new grounds, and must at last be determined by the peculiar circumstances of each plantation. But the error of continuing the old, as they often are, years after they have passed their prime, is self-evident. The first expence of the new, may weigh with the occupier who holds his farm by the year, or for a short term; but this is not the case with many of the principal planters. The same observation holds good with respect to the fruit plantations: these are often suffered to encumber the grounds, when there is scarce a hope left, that they may produce a crop anywise adequate to the expence of continuing them. This has given rise to the following practice, and were it universally adopted, it would probably prove advantageous to the planters in general:—The young hop-grounds are planted at proper distances with fruit-trees; these, from the frequent turning the soil and manure, are found to thrive better, and of course come to perfection sooner, by this than any other management followed in this county. The constant attention to the fences necessary for the hops, is of the greatest service to the trees, by protecting them from their greatest bane, the teeth and rubbing of cattle of every description. For years, there can be no doubt but the advantage to the trees, more than compensates any loss the hops sustain, considerably. Later, it is true, the trees prove prejudicial, by the spreading of their roots, and by their branches intercepting the light and heat of the sun; preventing also a free circulation of air. This, however, will not happen in any considerable degree, till they are fifteen or twenty years growth, the time when the hops, under this management, may be expected to decline, and it will be necessary to apply the land to the purposes of which it is most capable as an orchard. In this method, there would always be a constant succession of young vigorous plantations of both produce. Those years in which the hops fail, some return for the great labour and expence they are at-

tended with, might be looked for from the fruit; a larger proportion of the land would share in turn, that extraordinary attention which is now confined to those parts on which the hops are grown. The crops of these would probably never rise so high as they occasionally do now; but it must be remembered, these are not those which pay the planter best, as all the expences on the produce are the same, on a given weight, whatever price it bears. Moreover, the average produce of the plantations is now said to exceed the consumption: in the great years, such as the present, so much so, as to reduce the price so low as scarcely to repay the planter; they are, nevertheless, increasing: those of this county, within the last three years, have added one hundred and fifty acres to their former growth, and this, notwithstanding there appears but little prospect of any new markets for them being found: a very serious consideration, and highly deserving the utmost attention of the planters. If this statement proves true, the following practical inference may be with certainty drawn from it—that it will be advisable to forego some of those points which are particularly calculated to assist the crops of hops alone, in favour of a produce, the value and consumption of which are constantly increasing.

The circumstance of those hops which are most in request, ripening all at nearly one time, is a considerable inconvenience both to the owner, and holder of the estate: as they damage so soon, whether left on the wires when ripe, or gathered, if not dried immediately, it is necessary to have buildings, and a number of kilns in proportion to the size of the plantations, and more hands during the season, than would be otherwise wanting. Could those sorts which ripen earlier or later, be improved, or any others introduced, that do so, it would be a considerable acquisition. The parts necessary to perfect the seeds, are found on different plants, and as the greatest stress is laid on these, it may be proper to notice, that the practice of removing the barren stocks, may be car-

ried too far : it is an enquiry well worth attending to, whether this may not be the cause, in some instances, of the early decay on some grounds.

The following observations of Dr. WITHERING (Bot. Arang.) on the honey-dew, deserve to be introduced to the notice of the planters.—“ If the hop-yards were covered with stones, the plants would be less liable to suffer from the honey-dew, or from the otter moth ; for the honey-dew is the excrement of a species of louse (aphis) ; but these insects seldom increase so as to endanger the plant, unless it is in a weak condition ; and the larva of the otter moth attacks the roots, first occasion the plant to be sickly. Now, when the hop grows wild in stony places, and fissures of rocks, where the moth cannot penetrate to deposit its eggs, the hop is never known to suffer from the honey-dew.”

Under this view of the disease, might not the practice of smoking the fruit plantations, on the first alarm of a blight used in some fruit countries, be applied here to those of hops ? The other injuries to which they are liable, still remain without a remedy. A free circulation of the air through them, and complete draining of the land, are the only dependence. The use of the kerf is attended with one disadvantage, and which, when employed, almost solely, to destroy weeds, is of consequence : the person working with it, in some measure, defeats the intention of his labour, as he is continually treading down the soil again, he has just loosened ; and thus, in some degree, resets the weed he had but a little before turned up ; but the greater dispatch made with it, more than can be done with the spade, will probably continue it that preference in which it is held.

The tythe of hops is more particularly complained of than that of any other article, and considering the very great expence at which they are cultivated, it appears to be with reason. The present regulations respecting the hop-duty, are not complained of, and if the tax must be continued (to

use the language of the planter), it cannot, probably, be altered for the better. The only use of consequence, to which the hops are applied, is the preserving malt liquors. The shoots, called hop-tops, are introduced in spring, as an elegant vegetable, and somewhat resemble asparagus. Strong cloth is made in Sweden, of the stalks; for this purpose they must be gathered in autumn, soaked in water all winter, and in March, after being dried in a stove, they are dressed like flax.

The construction of the kiln is as follows—The brick-work rises perpendicular from the ground, to a height sufficient to admit of about two or three feet below the bars, or grate, on which the fire is made, and about six or seven above it. The dimensions at the base vary, according to the size required for the grate, and to give the brick-work sufficient strength to support the superstructure. The height of this is determined by that of the building, when it is not erected new for the purpose. At the top of the perpendicular brick-work, iron bars are fixed at right angles; on them are laid tiles, or large flat stones, where they can be procured; these are covered on the upper side with a coat of mortar. The name given to this part of the kiln, the spark stone, sufficiently denotes its use; it is placed in the centre, and of such size, as leaves room around it to admit the heat above, at the same time that it prevents the sparks from the fire being carried there. From this part, the brick-work becomes wider, overhanging gradually for about four feet, in a funnel shape, when it again rises perpendicular about two feet: here joists are worked in, at small distances from each other, and on these, laths are nailed, forming the floor. The brick-work is continued a foot higher, forming a breast-work round the top; on the floor, and round this breast-work, the hair-cloth is spread, in which the hops are contained.

II. OF THE FRUIT PLANTATIONS.

THE fruit plantations do not share, in any proportion, the attention paid to the hops ; such, indeed, is the natural fruitfulness of the soil, and so congenial to the growth of fruit of every kind, that it flourishes, even where most neglected, in a manner unknown to most other districts ; of course, necessity, the first spur to exertion, is wanting. Many circumstances, however, unite now, to fix the attention of the county on this article of its produce.

The plantations may be considered as consisting of those in the old orchards, and those of later date ; of those under the present improved management in the hop-grounds, and the single trees, either in hedge-rows or elsewhere. The old orchards are by no means deserving of particular notice, except for the strongly contrasted light in which they place the improvements already adopted, and to point out those which may be more abundantly introduced. There is no variety of soil or situation, surface or aspect, through the county, that has not its plantations under the old system. These leading circumstances of the present management, to judge from them, were much undervalued by our ancestors. They severally abound with a variety of the different kinds of apples or pears, and sometimes of both ; and are much crowded, their greatest distance being, whether in pasture or tillage, twenty feet between the rows ; and on an average, much less betwixt the trees (frequently, no order in the planting is discoverable) ; the heads, of course, have not sufficient room to spread, but are much entangled with each other, and form a shade so thick, as to injure materially, not only the fruit, but the crops also that grow beneath. In many instances, there is scarce an evil to which they are liable, though easily remedied with moderate attention, by which they have not suffered in a great degree. If the bark has escaped the teeth,

not a solitary instance occurs, where they have been preserved from the rubbing of the different cattle with which they are stocked. They are universally over-run with moss, and often encumbered with a considerable weight of mistletoe, and decayed wood: such is the condition of many, from age and neglect, that they ought to have been replaced by young plantations long ago.

There is but little can be added, respecting the trees growing in hedge-rows: the practice is now generally condemned, and given up, for reasons too obvious to be mentioned. Those of long standing, partake of all the defects of the old orchards, as far as their situation will admit; the same may be said of those scattered up and down the farms, or found in small clusters, the remains of former small inclosures.

It is from the plantations of later date, more particularly, that the following observations are drawn.—Different soils are well known to influence both the quality and flavour of the produce; some attention has been paid, in this particular, but by no means all that it is capable of; the size to which the several trees naturally grow, and the predominant characters of the fruit, being but little attended to, in fixing on them for the culture of the different sorts. Those preferred are, the deep loamy lands, and strong clays, when perfectly dry. The former, on the soft sandy stone, which prevails in some of the western parts of the county, though without any considerable depth, is esteemed particularly well adapted for cyder plantations. The gravelly clays, frequent in many parts, are also deemed favourable. Marl, when duly meliorated, is in much esteem; perhaps, strictly speaking, many of the plantations, said to be on a clay soil, are growing on a meliorated marl. These are what are preferred, and are even necessary for apples. The pear will also do well on most other soils.

The situations are generally chosen, so as to avoid the extremes, which either expose too much, from their elevation,

or are liable to suffer from moisture, by being low. A gentle declivity, and south or south-west aspect, with a view to secure them from the chills of the north and east, is sought for: some distant screen also to the west, to protect them from the violence of the winds proceeding from that quarter, is required. No preparation of the ground, for planting, is made, beyond that which occurs in the common course of husbandry.

The stocks are generally raised from seed obtained from the crab, or kernel fruits, and mostly bought at nurseries. The price is from eight-pence to eighteen-pence: the management of them must of course be uniform; the only object with the nursery-men being to procure strong, upright, handsome plants, without any view to their future application, as to the different kinds of fruit which they are to bear; some are also procured wild from the woods. They are planted at about eight or ten years growth, seven or eight feet high, and about four inches girth; in this situation, they remain in general three years before grafting, as it is esteemed the best practice, to graft after they are transplanted to the spot on which they are to continue. The time of performing this, is in the months of March and April. The methods chiefly used are, the stock and saddle grafting. In the former, the head of the stock being sawed off, and two or more openings made with the saw, and afterwards smoothed with a knife, an equal number of grafts are secured in them with clay, or the common soil of the ground, tempered into a paste with water. In the latter, the head is also taken off, and the graft bestrides its top, which is shaped up into a sharp edge to enter it, and is secured as above. When this method is adopted, it is always done at a much earlier period, and generally in the nursery. The grafts are mostly procured from the same, or some neighbouring plantation. In taking up and replanting, the setting of the tree upright is all that is attended to—but little method is observed in either cutting,

cutting, or placing the roots; the soil is returned as it came out, and if the ground is pasture, the turf is carefully replaced: they are then supported by one or two stakes drove into the ground, reclining towards them; to which they are tied with a band of hay or straw. In the hop-grounds, no further security is required, but in those that are liable to be stocked; they have either thorns fastened round them, or a frame to protect them: these frames consist sometimes of three stakes, standing triangular with cross-pieces; at other, of only two, but considerably broader than the former, and furnished in the same manner with cross-pieces. This, however, must be understood of the superior management; it is too often wholly omitted; or, having been provided at first, is afterwards neglected. In the hop-grounds, and more modern plantations, the distance usually observed between the rows, and betwixt the trees, is from thirty to forty feet. From this time till they reach their full growth, the only attention they receive is, to train the trunk upright, and to clear the head from the low hanging boughs, in order to place them as far as may be, out of the reach of cattle. Pruning the trees, and clearing them from decayed and useless wood, is, in some degree, continued afterwards. In about five years from grafting, they begin to bear; and in about thirty years, are supposed to reach their prime, and to continue in full vigour thirty years more. Pear-trees, for a still longer period; in many instances, they are known to have produced plentiful crops when a hundred years old. The produce of the different sorts of fruit, varies considerably—an apple-tree that yields a hogshead of liquor, is deemed a great bearer; whereas, instances have occurred, of a pear-tree affording three hogsheads, of a hundred and ten gallons each. Most plantations have their trees, that, in a tolerable year, give a hogshead each. The apples in most esteem are, the red and yellow stire, golden pippin, bland-rose, red streak, different sorts of quinnings, rennets, margils,

pear-mains, &c. &c. The pears are squash, huffcap, barland, linton, &c. As a general characteristic, apples of a yellow or red colour, both within and without, are preferred.

The management of the soil varies in nothing from that pursued on those parts not planted ; the same succession of crops is observed on the arable, and the grass-grounds are either mowed or grazed as usual ; nor is the choice of manure influenced, but by the circumstances of the soil. The different fruits, and their several kinds, ripen at different times, including the early sorts for the market. The season begins about June ; but the fruit-harvest, more strictly speaking, for the general orchard fruits, not till the beginning of September for pears, and the close of the same month for apples. Their falling spontaneously from the tree, is the only criterion by which they judge of their ripeness. Two methods of gathering are observed—the one is, hand-picking, when they are taken from the tree singly by the hand, so as to avoid every risque of bruising them. In the other, and more general way, they are shook off with long poles having hooks, with which they lay hold of the boughs ; or, when more force is necessary, they are beaten off with the poles. The first is usually followed with the fruits designed for the table, or the market ; these are generally gathered before they are fully ripe. The latter is universally adopted in gathering those for the mill ; in this also, the trees are always cleared of the whole of their produce at once. That which is designed for the table at home, or for the market at a later season, is laid up dry on the floors of large rooms, strewed with straw ; in frost, they are covered with it, and are examined occasionally, to prevent, as much as possible, the accidental decay of any from injuring others. That designed for the mill, is collected together, even the choicer, in large heaps, near the mill, in the open air, and on the ground : the two last circumstances are particularly insisted on, to prevent too great fermentation before they are ground.

But little care is taken to keep the several sorts apart: a particular quarter of the general heap, is the chief distinction; a partition with a board is sometimes made, but this is only for the prime fruits. The size of the heap is very uncertain, as no means are employed to confine them; in the centre they usually rise to the height of three or four feet. In this state they remain exposed to the weather, till they are judged to be mellow ripe. Should not the whole be made into liquor before the frost sets in, as is often the case in great fruit years, the heaps are carefully covered with straw, to preserve them from it.

What follows, with respect to the making of cyder, must be understood as relating to the general practice of the country. When deemed in a proper state, the fruit is conveyed into the mill, and ground with great care, so as to reduce the whole pulp, rind and kernel, as much as may be, into an uniform pap. When removed from the mill, it is thrown into a vat, where it remains for a day or two, till some degree of fermentation is observable. It is then put into separate hair-cloths, each being, when the sides are raised over the contents, about six inches thick; and from six to ten of these are placed, one on the other, beneath the press, where they are continued, under a most powerful pressure, so long as any juice can be forced from them. The liquor is then put into other vats, and when the grosser fæces have separated, it is drawn off into casks of sixty-three gallons each, leaving both the scum that had risen to the top, and what had settled to the bottom, behind. This being strained through a three-corner bag of linen, or woollen cloth, is added to the other liquor, and is supposed to be the best of the whole. This last part of the process is omitted till after the principal part of the liquor has been racked once, or oftener, as it is found necessary to check the fermentation; and the fæces separated at each time, are collected, and the whole strained as above. The liquor thus gained by straining, is found to possess considerable power to
retard.

retard fermentation; it is accordingly added to each vessel, in proportion as it seems more or less disposed to ferment. The refuse from the press in plentiful years, is thrown away; but in those of scarcity, it is mostly ground a second time, with water; and the liquor procured, is used as an inferior family beverage, called, provincially, *washings*. In very scarce years, it is not to be supposed but the cyder-house has its obligations, in point of quantity, elsewhere, as well as to the trees. The management of the fermentation and fining, is an art so refined, so enveloped in mystery, that mortal language is not equal to the describing of it; though communicated some way or other to numberless votaries, they have all acquired it they know not how; of course they cannot, perhaps will not, give any information on the subject. This much is certain, no borrowed ferment is used, and the fining is variously conducted with white of egg, isinglass, ashes, sand, bullock's blood, or red earth, according to the suggestions of the several genii who may be supposed to preside over this part of the business.

The dimensions of the buildings vary according to that of the plantations. The construction of the mill is this:—A heavy round and flat stone, running round on its edge in a circular trench, sunk in several others closely joined together: the fruit is thrown into the trench, and ground by the weight of the circular stone rolling round, and drawn by a horse. The dimensions of the bed, or horizontal part of the mill, that in which the trench is made, in one of a middle size is about ten feet diameter, and stands about twenty inches from the ground. The depth of the trench, is from eight to twelve inches. On the inner side, it rises perpendicular, the outer sloping so as to give about four inches greater breadth at top than at bottom; by this means the fruit, when crushed from under the roller, rises chiefly on that side, and is more easily returned into the centre by the person who follows, generally a woman, or child, who also attends to the horse. The re-
turning

turning of the fruit into the middle of the trench, is sometimes effected by fastening a piece of wood, used for the purpose, to the mill work. The size of the circular stone, or roller (that which runs in the trench) in a mill of these dimensions, is about four or five feet diameter, and about fourteen inches thick; the weight varying according to the texture of it, from one ton to one ton and a half. An axle-tree passes through the centre of the roller, one end of which extends sufficiently over the bed of the mill to admit of a horse being fastened to it; the other enters an upright shaft, which has a circular motion by means of a pivot in some beam or bearing of the floor above; the bottom has a similar motion on the centre of the mill. The axle-tree has also a rotary motion in the shaft, and again in that part to which the horse is fastened. Thus a circular and rotary motion is obtained. In this state, however, which is by far the most general, the machine is incomplete, as the roller frequently slides along the trench, forcing the fruit before it. To obviate this defect, a cog wheel has been added, in several instances, to the inner arm of the axle-tree, which working in the teeth of a corresponding wheel fixed on the surface of the bed, this motion becomes equally certain with the other. Another improvement, lately adopted, is this—the inner edge of the roller is sloped off, so, that when standing in the trench, it forms with the bed of the mill a level, by which means the circular motion is much eased. The rotary motion is also much assisted. The press is constructed on the same principles of every other perpendicular press: short levers are used at first, afterwards longer; and at last, a long iron bar. To increase the purchase, a strong rope is ultimately fastened to the end of the bar, by means of an open noose, and secured from slipping off by a pin; this rope communicates with an upright post in a distant part of the building, moving on pivots at each end; the lower, in a hole of the floor, the upper, in some of the timbers above: this post has also openings about three or four feet from the ground,

to admit levers, by which it is worked, and the utmost force required is obtained. A cast iron screw has been lately introduced instead of the wooden one—no inconsiderable improvement.

The only defect complained of in the mills, is this—they do not always break the kernel sufficiently (it must certainly be very difficult to fix so small, hard, and slippery a part, when dispersed through large quantities of soft matter in machines of such dimensions), nor is it probable any improvement of the present simple, but excellent construction, can wholly obviate it. Nor do the different contrivances hitherto proposed, seem likely to be very generally adopted. Such, however, is the price the more perfect liquors bear, as to make any moderate additional expence not of material consequence. In preparing these, picking the fruit, so as to separate that which has been damaged, is particularly recommended by the first managers. When this is done, might not the person thus employed, with a circular scoop, take out the core of the apple with but little additional trouble? The form of the instrument conceived under this idea, is as follows: the cutting part of it cylindrical, open at both ends, half an inch, or rather, more in diameter, and about two inches long; from each side proceeds an upright piece, three inches, or something longer than the largest fruit, to give room for the core to fall out between the top of the cylindrical part and the handle: this is formed by these two pieces meeting in the middle, and entering a cross piece of wood. It is conceived, that with little practice, this might be used with considerable expedition by children, at very low wages: bone would be the most eligible material to make it of. Should metal be used, the inside of the cylinder might be armed with two or more cutting edges, crossing the diameter, or rising along the inside; these would serve to divide the core still more. The kernel, thus separated from almost the whole of the pulpy part of the fruit, would, if ground by itself, be with more
certainly

certainty brought under the action of the mill ; or would be reduced with much less trouble, by any of the other machines that are used, or have been proposed, for grinding fruit. The method of using it would be this—a piece of deal, or any soft wood, must be fixed before the person employed, on which to rest the fruit, while the scoop is forced through it, and a pail, or bucket, underneath, to receive the core as it drops from the scoop, each forcing out that which preceded it. Should the idea, as thus stated, be approved, it may be carried still farther. The fluted iron rollers, used in some parts of Herefordshire for a cyder mill, might be adapted to this grinding of the kernel ; and contrived, without much additional machinery, to work with the present mill, or the construction of the malt mill could be easily applied ; the nut being fixed on the inner arm of the axle-tree, the box secured by a support, projecting above and below from the upright shaft. All this, however, is only conjecture, no attempts having been made as yet, to put it in practice. Should it be found to answer, or lead to any other improvement, by directing the attention of the ingenious to this defect of the present mill, every end proposed will be fully attained.

The stone of which the mills are made, is not met with in any part of this county ; they are procured from several parts of Herefordshire ; the nearest is Bromyard-down, a distance of about eleven miles from Worcester. Those most in esteem, are brought out of Wales. The price of the stone, worked at the quarries, is twenty shillings per foot ; that is, a mill, the bed of which measures ten feet in diameter, costs ten pounds ; the expence of setting up one of these dimensions, four or five pounds ; the price of the hair-cloths for a press, to a mill of this size, is from five to six shillings each ; they measure about three feet six inches square, and last, with care, twenty years or more—the mills, a hundred years and upwards.

The superiority of the mills of this district over those generally used in Devonshire, has been already noticed; and so very obvious are the advantages they possess, that it appears matter of much surprise, they should not have hitherto supplied the place of their very imperfect contrivance to break the fruit—this being the most the mills of that county can be said to do. The benefit derived to the liquor, from the rind and kernel, appears to have wholly escaped the observation of the cyderists of that district, and is certainly the reason of their sending the fruit to the press so very imperfectly reduced as it is in their present practice. The hair-cloths employed here in the press, should also supersede the reed and straw used there. They are not only more convenient, but, on the whole, considerably cheaper; the reed for a hogshead of sixty-three gallons, costing, on an average, sixpence, seldom less.

There are other circumstances in which the fruit management of the two counties varies considerably. The following instances may possibly be found deserving the attention of the planters of this.—The orchards of Devonshire are wholly appropriated to this produce; no other crop, except now and then a little garden stuff, is ever expected from them. It is, as before observed, a general clause in their leases, that they shall not be stocked; and though horses, and perhaps calves and pigs, are turned in, in the spring and beginning of summer, it is mostly a trespass upon the covenant. Sheep are universally excluded, and this, from a well-grounded apprehension, that the grease, or whatever it may be they leave on the trees after rubbing against them, is peculiarly prejudicial.

Upon the first surmise of a blight, they collect the coarse grass of the orchard, or any other material that in burning produces a considerable smoke, and with this they fumigate them. Myriads of insects have been known to be destroyed in this manner. The fruit is gathered as it falls from the
tree.

tree ; no force is used till the leaves are mostly fallen, and all employed then, is shaking with the hand, or striking between the larger branches with a slight pole. It is, if possible, collected when dry, and housed in a loft over the mill, separated frequently with partitions, all opening by sliding boards into one part, in which there is a hole, through which it is let down into the mill ; as that gathered first is placed nearest the opening, it of course is also ground first. No respect is had to quantity ; whatever the loft will hold, is placed in it without scruple. The circumstance of much rain falling on the fruit when separated from the tree, though totally disregarded, or rather recommended here, is considered there as one of the most fatal accidents that can befall it. If the loft over the mill is not equal to the whole crop, what remains is laid up in other buildings.

As some liberty has been taken, in reprobating what appears to be the general management of the county, with respect to the fruit plantations, the following observations are offered, with great deference, to the consideration of the planter.

The advantage of situation is thoroughly understood, and though there is some difference of opinion as to aspect, the leading principles are well ascertained ; and will no doubt, in due time, be universally carried into effect. The general outlines, with regard to soil, are known and observed, but there appears room for improvement in the filling of them up ; that is, in the appropriating of the several soils which are fit for fruit ; to secure and improve the discriminating qualities by which each of the superior sorts is distinguished. Trees which naturally grow to a large size, planted on a shallow soil ; austere fruit on a strong clay ; and that which is dry and spungy, on a crude marl, are errors often met with, very obvious, and easily avoided. The stock should be raised under the eye of the planter, or under his who has a still greater interest in the success of the plantation,

tion, the proprietor's of the estate. In the nursery, a proper distinction should be made, of those raised from the seed of the crab ; those from an austere, and those from more mel-low fruits ; that they may be each applied to the growing of fruit of that character they suit best, or may be most likely to improve. There certainly is no sufficient reason why those from the crab should be uniformly preferred ; the others may, without doubt, in many instances, have a preference : they decay sooner, but they also come to perfection sooner ; and when the seed is selected with care, from young vigorous trees, as that of every kind ought to be, are found to possess every requisite to form handsome and lasting plants. Owing to inattention in adapting the stock to the size of the tree it is intended to support, it is very common to see the upper part of the trunk, that growing from the graft, several inches larger in girth than the lower ; that which remains of the stock, forming a considerable projection where the graft was inserted. Great care should be taken in the choice of stocks, independent of that to ascertain the seed from which they are raised. At a very early date, a pretty accurate judgment may be formed of the future success of the plant ; at two or three years growth, many will be found to put out thorns ; others will be disposed to throw up shoots from their roots ; both should be invariably removed immediately.

An improved practice in grafting, has been lately introduced, and deserves to be more generally adopted. Instead of taking off the entire head of the stock, it is left on till the the boughs are large enough to receive the grafts. An injury to which the trees in general are liable (splitting in the crown) is by this means in a great measure avoided. The common soil, or clay, used to defend the grafts, is apt to crack, and fall off in dry weather ; and a compost of sand, and new cow, or horse dung, would be a useful improvement. The absorbent system of plants, being now generally admitted, it is an inquiry worth attention, how far the

practice of taking off the whole head of the tree, in grafting, may prove prejudicial to its growth. The spare trunks of the lopped elms of the district, stretching out their small heads to the length they do, in quest probably of nourishment they have been deprived of, certainly countenance the suspicion.

In preparing the ground, something more than the mere sinking of a hole capable of receiving the roots, ought to be done. The openings should be made at least two feet deep, and for some considerable time before hand (the longer in reason, the better); the earth, more particularly that from the bottom, should be repeatedly turned; if the soil be of a stiff marly nature, till it is completely reduced. They ought also to take in a circumference exceeding that of the roots, in order to give the young fibres sufficient room to extend themselves through the meliorated soil: six inches is the depth at which trees ought to be set. In planting, the hole should be nearly filled up with some of the inferior soil; on this the sod, which will probably be nearly rotten, be laid, and the roots spread with care immediately on it. A necessary precaution is this, that they do not cross each the other, and that they extend as much as may be, equally in every direction; the remaining mould should be then returned, throwing the best, that from the former surface, round the outer part of the hole, and working it carefully in among the extreme roots. To those who have been accustomed to plant in the usual manner, these directions will, perhaps, appear trifling and unnecessary; they are recommended, however, not as a plausible theory, but as the result of a very considerable experience. Watering the holes before planting, and the trees after, has been practised, and it is said with advantage; but the time and labour this requires, to do it properly, or rather so as not to prove injurious, must exclude it from the common practice; it will be, however, right to pay attention to the nature of the soil,

and if dry, or of a very loose nature, to plant rather in the months of October and November, than in the spring.

The following instance of successful management in this particular, deserves to be recorded, more especially, as there are many situations in this county that now lie neglected, on which it might be adopted with every prospect of success. The ground planted was in pasture, with a gentle declivity; the soil, a shallow strong clay, on a solid calcareous marl. About the middle of March, circular holes were opened, about four feet in diameter; the sod, with the surface soil, to the depth of about six inches, was thrown up on one side, on the other, that beneath, so as to leave an opening two feet deep: during the summer, the whole was repeatedly turned, and as winter came on, the earth being then dry, was thrown up separately into round tumps, by the sides of the opening; on the approach of the following spring, small gutters were made level with the bottom of the holes, opening on the surface below, so as to carry off all the water that could collect in these basins formed in the marl. In planting the trees, the method already recommended was observed, and in the following winter, a circular trench, two feet wide and two deep, was dug out round the outsides of the first openings; the soil left exposed, and turned as before; and the ensuing summer, it was nearly filled with furze, before the soil was returned into it, with the view to keep it loose, and by that means invite the shooting of the roots. The gutter was also extended, and carefully preserved. On the adjoining ground, the situation and soil exactly similar, a plantation was made in the usual manner, the trees being set when the openings in the first were made. The latter was repeatedly manured, and managed throughout with attention: on the former, no manure has been used. The trees of each plantation were young and thriving, about the same age when planted, and every other circumstance, exclusive of the method of planting, the same. The result

of the experiment, for such it may be called, though accidental, is this—the trees of the former plantation are at this time (about fourteen years from the first opening of the ground) full twice the size, some even three times, that of those in the latter, which are nevertheless allowed to be well grown. The difference of the produce is equally great. One circumstance, however, ought not to be omitted, and may probably be thought to have contributed in some measure to the superior growth of the former: they are trained so as to form low spreading heads, branching off at about two feet from the ground. The latter, on the contrary, to form what has been termed the upright besom-head, with a stem about five feet long, which is the usual height in the more western parts of the kingdom.

The only motive that induces to guard the trees, appears to be the apprehension of their being torn up by the wind, or barked whilst young, by the cattle. The mischief done to them in every stage of their growth, by the rubbing of the cattle, is totally disregarded. Such, however, is the opinion entertained of it in another fruit district, that, as has been before stated, it is usually an article in their lease, that the plantations shall not be stocked at all, principally with a view to obviate this mischief. Here are two extremes, perhaps both equally remote from the point of good management. This much is certain, that the continuing the fences round the trees in the grass-grounds, and keeping the stock of every kind off the tillage, after the crops are removed, and when fallowed, would be amply recompensed by the growth and fruitfulness of the trees.

The inconveniences attending the gathering and sorting of the fruit from orchards, where they are growing promiscuously, are so evident, that future planters will undoubtedly avoid them, by appropriating separate spots to the several varieties.

The present generation has to regret a great want of attention in their predecessors, in the choice of their fruits, in a

considerable proportion of the aggregate plantation, a total neglect; this consisting of the bare spontaneous production of accident, notwithstanding they had fruits to choose from, perhaps equal to any art can produce. A just idea of the importance of this neglect, may be formed, by comparing the great difference in the price the better and inferior sorts bear, and will no doubt have due influence with the planter of the present day. Indifference in this point, would be the more unpardonable, as it is not for future ages alone he plants; he often lives to share abundantly the cheating offspring of his labour.

When young orchards are planted out of the hop-grounds, and the distances now recommended are observed, might not cherries be advantageously planted in the rows between the apple trees? It is said to be practised in some fruit districts, and with success. They bear, and reach their full growth, much sooner than the latter, and produce a very lucrative crop. In the neighbourhood of Worcester, there are about twenty acres in cherry orchards, now in perfection; ten of which are known to be lett for one hundred pounds per ann. the remaining ten are not in any respect inferior to the others, and probably bring, nearly at least, the same rent; and yet, such is the demand for the fruit, that the market, three times a week, opens by three or four o'clock in the morning, and is generally cleared before seven.

It appears extraordinary, that a doubt can possibly arise, whether or no the two additional crops of the fruit and hop districts, operate ultimately to the advantage of the occupiers. In this county, about six thousand acres of hop-ground, and perhaps a third of this quantity (two thousand acres) may be estimated as adequate to the injury the ground crops sustain from the trees; these making together eight thousand acres; and may be supposed to produce this year, calculating by the former statement of the exports, as follows:—By hops (the lowest average price cannot be set down, now, at less than

than 3l. 10s.) 126,000l.;—by fruit, 11,625l.;—by cyder, 30,000l.*;—by perry, at the average price of 5l. 10l. per hogshead, 5,500l.; amounting in the whole to 173,125l.; that is, considerably more than 21l. per acre. To this must be added, a saving in malt to a very considerable amount; and yet, a doubt not only may, but is very generally entertained, whether or not the tenantry at large is benefited by these crops. The same number of acres, under a common course of husbandry, in no instance, in this neighbourhood, produce a sum equal to this, even after allowing for the more frequent failures to which these are liable. To state this circumstance, is all that can be done; to investigate the subject fully, would exceed the limits of this Report; one circumstance, however, relating to the fruit, as more particularly striking, may be here mentioned, in addition to what has been said before concerning the hops—this is, that the fruit plantations have not been hitherto considered, by the more numerous part of the planters, as producing an article for the market. Provided they are fortunate enough to get the enormous supply of liquor necessary for the home consumption, without having recourse to the maltster, they rest contented. It may be urged, that the market for these liquors

* Price of cyder, such as in general used in London, and in public-houses, from 1781 to 1794, communicated by Mr. HOOPER.

PER HOGSHEAD OF 110 GALLONS.			PER HOGSHEAD OF 110 GALLONS.		
1769	-	21 Shillings.	1781	-	52 Shillings.
1770	-	35	1783	-	20
1771	-	40	1784	-	25
1772	-	63	1785	-	80
1773	-	90	1786	-	100
1774	-	35	1787	-	90
1775	-	32	1788	-	21
1776	-	21	1789	-	43
1777	-	100	1790	-	45
1778	-	35	1791	-	46
1779	-	60	1792	-	60
1780	-	19	1793	-	52 6d.
1781	-	50			

is not very extensive ; but does not the high price at which the more pleasant sorts are sold, chiefly contribute to confine it ? Those that are rough, more plentiful, and cheaper, are not a marketable article out of the plantations ; it requires a long habit, to reconcile the palate to them.

CONCLUSION.

IN concluding this account of the rural œconomy of this beautiful county, the person to whose lot its survey has fallen, wishes to observe, that throughout the whole, it has been his endeavour to state the several circumstances of it, in as accurate and distinct a light as possible : but little claim of originality is made, and he trusts no charge of inaccuracy, from a neglect of earnest exertion, can be brought. Where any improvement is proposed, it is the result of frequent consultation with some of its first managers ; it is their practice particularized, in hopes that, if these sheets ever reach the hands of the less informed tenantry, they may have that merit, at least, of directing their attention where they cannot imitate without improvement.

To the nobility and gentry, and several of the principal tenantry, many thanks are due, for a most favourable reception, and kind assistance* ; to the Board, and their respectable

* The only particulars, about which the Author found any difficulty in procuring information, was in regard to hops and fruit. The planters of these, were in general inclined to be tenacious of their knowledge, at least few, actually engaged in the business of raising either, seemed disposed to be very communicative upon the subject. This, it is believed, might be principally owing to the apprehension of taxation, the cyder tax not being yet forgot. This jealousy, however, it is to be hoped, will soon be removed, as it is only by a free communication of ideas, and comparing the result of experiments made in different parts of the kingdom, that either hop plantations, or orchards, or the making of cyder and perry, or indeed any other art, can be much improved. It was principally with a view of comparing the practices of Devonshire and Worcestershire,

ble President, some apology, perhaps, for the lateness of the return: this, however, was, in a great measure, influenced by circumstances not to be remedied either by zeal or industry.

cestershire, in regard to fruit, and the liquors thence extracted, that the Author was sent by the Board of Agriculture from the one county to the other; and from the information accumulated upon the subject, by the survey of this and of other districts where hops and fruit are attended to, the art of raising, and the proper management of both, will probably be brought to perfection.

APPENDIX.

NUMBER 1.

MR. TURNER'S ACCOUNT OF THE WATER MEADOWS ON THE FOLEY ESTATE
BEING THE SUBSTANCE OF A LETTER TO MR. POMEROY.

THE plan of watering the lands in this neighbourhood, belonging to the Foley family, is shortly as follows:—It is in the first place necessary to observe, that all mills on the brook, or stream of water, as soon as it enters on their property, unite with the river Stour, for near three miles, belongs to them, of course they have the controul of the water. At the upper end of the stream, are three or four water courses, made for several miles upon a level to the different farms that are watered, the old stream divided in a manner proportioned to the quantity of land each course intended to water. The farms that receive this valuable acquisition, are eight or nine, and the quantity of land watered upon the whole of them, is between three and four hundred acres. The quality of the soil, in general, is a very light sand, and in some parts of it mixed with gravel: by the division of the stream as above, each farm has its portion of water repeated from two days to a week, every three weeks throughout the year; and in order to prevent the least dispute between the tenants, respecting the distribution of the water, a person is appointed to turn it from one person's land to another next in turn, at certain stated times fixed for this purpose.

The farmer then takes to the management of it, and floods such part of his land as is generally prepared to receive it. There are very few of them that mow the whole of the land they water, but mow and graze it alternately, in such a manner that they have the water at all seasons of the year in their turn. A very considerable quantity of land in this neighbourhood, is well situated to receive this improvement, if the stream were sufficient for the purpose, besides the number of acres already mentioned, the greater part of which was formerly a very poor arable land, and not worth more than five shillings an acre. The industrious farmers are very attentive to the use of the water, the gutters are cut for floating, with the use of a water-level, and the more numerous the gutters are, the greater quantity of grass the land produces. In some situations with the use of little stop-gates, the gutters are cut deep enough to drain the land, and are made to float: this circumstance, where the land requires it, is worthy of great attention. The whole plan of irrigation, where practised (and very few farms in the neighbourhood but will admit of it in some degree), is beyond a doubt the first, and greatest improvement, at the least expence, ever discovered.

NUMBER II.

MR. DARKE'S ACCOUNT OF THE AGRICULTURAL STATE OF HIS NEIGHBOURHOOD.

The following paper, drawn up by JOHN DARKE, Esq. contains so many useful observations, that it was thought advisable to print it separately.

Bredon consists of seven hamlets, Mitton, Hardwick, Kinsham, Norton, Westmancoate and Cutsdean. Five of these hamlets are in open fields; the soil very various, nearly one-half bears turnips tolerably, the other parts are clayey gravel; it all bears clover well: we have pebbles in every soil.

By our situation, we are much exposed to the south-west winds, having few intervening hills between this place and the Bristol Channel. Situation, the west end of Bredon hill, about three miles from Tewksbury in Gloucestershire: the southern part of the parish runs up within one hundred yards of that town. The Earl of COVENTRY has six hundred acres of inclosed land at Mitton, in a ring-fence, not to be equalled in richness and fine produce: to this farm the plough is a stranger; the soil a black loam. The parish, for five miles on the west, is bounded by the navigable river Avon, and by the river Carran for three miles on the east.

The lands being in common fields, and property much intermixed, there can be of course but little experimental husbandry; being, by custom, tied down to three crops and a fallow: first, barley, second year, beans (which always produce abundantly), or clover or vetches, which are ate off as green crops by the horses, tied with stakes and ropes, made with the rhind of wych hazle (a nasty habit peculiar to the Vale of Evesham); yet there are well-informed gentlemen, who highly commend this mode of husbandry. The third, wheat, which is sown on the bean stubble, or clover sward, and this mode invariably succeeds better than sowing it on fallow ground—a doctrine in general disbelieved by those who are strangers to the Vale of Evesham, so remarkable for its high ridges and deep furrows.

The mixture of property in our fields, prevents our land being drained, and one negligent farmer, from not opening his drains, will frequently flood the lands of ten or twelve lie above, to the very great loss of his neighbours, and community at large. Add to this, that although our lands are naturally well-adapted to the breed of sheep, yet the draining, &c. is so little attended to in general, that out of at least one thousand sheep annually pastured in our open fields, not more than forty, on an average, are annually drawn out for slaughter, or other uses: infectious disorders, rot, scab, &c. sweep them off, which would not be the case if property was separated. Draining the lands, is the principal, and first good effect from inclosures. In our uninclosed hamlets, the meadows and pasture are fairly proportioned to the arable, which is, on a computation, about one thousand six hundred acres; the pasture one thousand three hundred, and the Avon meadows eight hundred. There are, besides, five hundred acres of commonable land which are of little or no value; being over-stocked, produce a beggarly breed of sheep of no use to the owner, for being constantly brought off the high lands in autumn,

re and feed on the lands subject to floods, they are there baned, which consequently prevents the public from that produce which might assist population and commerce.

The farms are from five hundred to ten pounds annually.

Some of the finest pastures at Mitton, and Bredon, are employed in feeding oxen of the best Herefordshire and Devonshire sorts, for the London markets. We likewise have some of the best Gloucestershire hill sheep; we touched on the Leicestershire, and found them (though handsome), rather too small for our rich pasture. We feed the sheep we breed, for the London markets. Our other pastures are used, in general, for dairies; some of these are employed in making butter for the Birmingham market, and a skim cheese they call two meals, or seconds; these sell for eight shillings per cwt. less than the one meal, or best making. The dairies that make best cheese, produce no butter, but depend entirely on the cheese. Where they make the skim cheese, it is deemed too rich for one meal, as it causes it to heave, and that produces a rank flavour.

We have no new made pastures; the old ones abound with honey suckle, yellow pimpernel, crested dogstail, perennial rye-grass, &c. Being an extensive parish, in some parts, where are few or no commons, our breeds are good; and we have a general farmer, a Mr. COTTER, who has been crossing some well-bred wide horned cows with a Devonshire bull: I believe this is his second year; and what young cattle and sheep I have seen, are very promising for size and beauty.

In other hamlets, there are commons for young cattle; these are usually overstocked, consequently the breeds of no note; nor will they be improved, unless the common fields are inclosed; we should then vie with our neighbours, in the best breeds of meadows, rich from the washing of the manure and sheep-folds of Warwickshire. The Vale of Evesham, would naturally enlarge the growth of our stock, and excite emulation in our breeds.

In one instance only, the water of the fold-yard is carried over a large field, evidently to the advantage. Our meadows are wonderfully enriched, and at the same time too frequently damaged, by the overflowing of the river Avon, which extends itself near six miles through this parish. We on the spot, conceive our meadows to be the first flooded, to lie the longest under water, of any in this kingdom. Severn is our natural drain; we want in wet seasons more sluices, or gates, or wares (which might be easily made), to conduct our overflow of water from Avon to Severn; could we be unanimous in the method of effecting it, the expence would be easy: nothing would improve this part of our country, or render us such essential service. Now I am noticing meadows, if ever an inclosure takes place, the meadows should be lotted, to lay proper together, but not divided by fences.

Our land produces good crops of wheat, barley, beans, pease, clover, &c. as the seasons suit each or either.

The crops of turnips are in general very good, on those parts that suit the cultivation. We have lately practised hoeing, and find it add at least one-third to the value of the crop. We eat the greatest part off with sheep, and many are haled into the farms for cattle; in wet seasons, our sheep tread the lands, owing to the deep loam and soft soil, to the prejudice of our barley crop. Notwithstanding this, we prefer the sheep

sheep for this business, as it firms the land ; besides this, it backens the mation poppies, and other light weeds of that species, and prevents these light weeds from getting too powerful in the succeeding crops.

Our usage, or system, time immemorial, has been, three crops and a fallow ; during the fallow year, the lands are a common pasture for sheep.

Nature has been so bountiful to us, we often put our manure immediately on the land from the fold-yard ; but when we spare it from the arable for the pasture, we make dung-hills, which we seldom turn more than once ; and when we clean our ditches and pools, mix the soil with it. We are not famous for mixens, nor do we use lime, which, in many parts of this country, is the first and best manure.

The ploughs and waggons that are made in our hamlets, are, as we here term it (out of the way things) ; but the first waggons in the world, are the Gloucestershire bill farmers' waggons : these are low and wide, calculated to carry large loads of grain in the straw, in a snug manner, at the same time they run so pleasant, that a jack-ass would draw a ton weight for miles, with ease.—JONES, of Withington, near Frog Mill, with many others, is noted for making them. The ploughs are natives, and such as are seen no where but in the Vale of Evesham. Speaking of myself, I am no experimental farmer, or possessed with any mechanical genius, I therefore use them as my father did before me ; they are made with wood, except the share and coulter, very long in the tails, throck and shelve board, a load for a team ; and though I own their awkward appearance, I have never had prudence to try other sorts, from an ill-grounded habit, or conceit, that no other plough would answer in our steep ridges, or turn its furrow so regular and true. Four horses at length, are our usual plough team ; only one ox team ; this is drawn at length, with open collars, and horse harness, and answers well.

Wheat is sown from the middle of October to the end of November, under furrow broad-cast, and trod in with men ; on the clover sward we harrow it in ; some little drilled. Beans are all set by line : we prefer setting them north and south, to have the benefit of the sun betwixt the rows ; these are hoed three times, with the gardener's coming hoe ; the large tick bean is used, and are set single by women, who have twenty-pence for setting nine gallons and a quart, the customary bushel ; allowed a quart of cyder to each woman per day—good hands get from fourteen-pence to twenty-pence per day ; produce, sufficient to satisfy the cultivator.

I have every reason to speak in praise of inclosures : about twenty years back, I obtained an act to inclose a parish in Gloucestershire, of strong clay lands ; my allotment was about four hundred and fifty-three acres, which, in its uninclosed state, averaged about eight shillings per acre, and will now bring upwards of thirty shillings. We must allow some part of the increase to the times, but the improvement is greatly owing to its turning from indifferent arable to most excellent pasture. Before the inclosure, the cattle and sheep were infamous ; they are now of the first quality. My zeal for inclosures has carried me from Worcestershire to Gloucestershire. I hope the digression will be excused. From my commencement of farming, I have converted five hundred acres and upwards, of arable land, into pasture, and greatly increased its value. I lay down with white honey suckle, only eight or ten pounds to an acre. All other

seeds, except the trefoil, are injurious in these soils—six or eight pounds of milled trefoil to the acre. Trefoil assists for the first year only.

Very few inclosures have been made in this district of the county; but as we lie at the extreme southern part, we are intersected on all sides by Gloucestershire, where there have been various inclosures, some very near; and in general, where they have been completed fifteen or twenty years, property is trebled, the lands drained; and if the land has not been converted into pasture, the produce of grain very much increased; where converted to pasture, the stock of cattle and sheep wonderfully improved. Where there are large commons, advantages are innumerable, to population as well as cultivation, and instead of a horde of pilferers, you obtain a skilful race, as well of mechanics as other labourers.

Our inclosures on the hills are from forty to twenty acres; in the vale, from thirty to ten, with smaller closes about the homestead, for orchards, and other conveniencies.—About two years rent is usually allowed for inclosing large common fields.

Population is generally increased, as much in our inclosed parishes as our unin-closed: in our next parish, Kemerton, in Gloucestershire, it is evidently so, and many new houses built.

I observed before, five of our hamlets are common fields. An inclosure was proposed by the rector, about nineteen or twenty years since; his terms I approved, but many of our neighbours were violent in opposing it, and it dropped; since that time, the advowson and rectory have never been in the same hands, and the late and present rector, having only life interests, and otherwise not men of business, no plan or offer of the kind has been attempted.

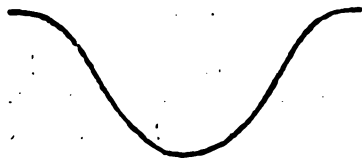
Mr. KEYSALL, one of the partners in CHILD's house, has lately purchased the advowson. I hope he will see his interest, in inclosing one of the richest parishes in the county of Worcester; and here it may be proper to observe, that Cutsdean (one of our hamlets), was inclosed at the time I mentioned the attempt was made to inclose Bredon, and though situated on Cotswold Hills, near Stow, sixteen miles from hence, the living improved sixty pounds per annum for twenty-one years, viz. from forty pounds to one hundred pounds; and in three years time, will left for two hundred pounds per annum; as the present lease expires.

Our commons chiefly lie high; four hundred acres in extent. Would make excellent tillage, bear turnips, seeds, barley, wheat, feed good sheep, &c. if cultivated in the Gloucestershire hill husbandry (there the barren rocks are made almost as profitable as the best vale soil); another part would make excellent pasture; there are, besides, twenty acres of scar and rock, that would answer well in plantation, and greatly beautify the vale below it.

To men skilled in shepherding, and fothering our stalled oxen, we give from 11s. to 12s. per week; our carters, from 8s. to 10s.; the taskers, or threshers, mostly by the piece, earn from 8s. to 9s.; old men, and moderate hands, 6s. per week; mowing grass, 18d. per acre, with a gallon of beer, or best cyder; reaping wheat, from 5s. to 6s. per acre, with a gallon of beer, &c. women from 6d. to 7d. per day, no beer; mason and carpenters, 20d. Wages increasing. Harvest month we pay our labourers 56s. and beer, best hands.

In common fields, little nor no attention is paid to drains. The Severn is our main drain; the Avon the first conductor to it; our brooks and ditches leading to the Avon change their owners as the lands vary: consequently the cleansing is not regularly attended to. Much draining has been done in inclosed fields; some in the open fields. We prefer the stone-drain; what was done formerly with wood, is entirely worn out and in gravelly soil, it goes very soon indeed.

The most skilful drainer I know in Worcestershire, is the present Earl of COVENTRY: his part of the county was a morass, not half a century back, and is at this present time (though formerly a moorish, fœtid soil), perfectly dry, sound for sheep, and other cattle. He has but few under-drains. His principal drains are open formed, thus



turfed to the bottom, so that cattle can graze without any loss of herbage; no water ever stands; and Croome is now noted for its dryness, as well as being well kept; and although the house is surrounded with fourteen hundred acres, under his own inspection, you do not see a tree, bush, or thistle growing upon it, undesigned or out of place. It may very justly be stiled a pattern farm to this kingdom, from its well-formed plantations, and its judicious and extensive drains. He has a beautiful breed of the Holderness, or Yorkshire cattle.

Paring and burning is little used, but where it is, no management equals it; the farmers on our hills are shy of acknowledging its benefits.

There is not much wood; the tenants, without restrictive covenants, in general deface our neighbourhood in a hideous manner. Elm is the prevailing tree, in short the weed of the country; it would grow to an immense size, if left unmolested, instead of which, they are cropped and lopped, either to find fuel for the merciless farmer, or stripped of their boughs to the top, to shew the young man's skill in climbing.

Our markets are well supplied, and very regular; the price of provisions bears a proportion with our tradesmen's bills; our labourers are well fed and provided for: without these are made comfortable, our lands would be of little value. The rise or fall of provisions depends on various circumstances.

The roads are in a very improving state—we border on perfection. We have a neighbour, Mr. MARTIN (member for Tewksbury), who has amply supplied us with advice, with large sums of money, and unremitting attention: by throwing in our mites, instead of being proverbially famed for bad roads round Bredon hill, we are now as much noted for good ones. Our method is, to form them like a half-barrel; in false ground we use wood or furze; large stone, then smaller stone, covered with gravel, thick enough to prevent the frost tearing the stone; this mode, with attention, gives a firm road. As I have before noted that good roads make good farmers, would it not be a proper proceeding in the Board of Agriculture, to petition Parliament, in its justice to take

into due consideration the heavy fees of the House, in regard to road acts and inclosing bills, hoping it would not be beneath the dignity of that Honourable Assembly to moderate those fees, as in their wisdom they might judge fit?

We rather excel in our farm houses, which are chiefly situated in villages near the common fields.

Leases are by no means general; but when a tenant takes a farm in our open field, he holds it by custom for four years; and there is the greatest reason why this custom should be lawful: three crops and a fallow conclude a round of four years, and as the odd marks vary in quantity, in four years, he has had crops of all the different grains, and gets his average. His entrance is on the green and fallows at Lady-day; being deprived of his crop the first year, he finishes the crop after his rent ceases. There are some leases on our inclosed farms, but none restrictive, as to trees. In MARSHALL'S minutes on Gloucestershire, and the Vale of Evesham, I supplied him with a lease, I then conceived well drawn; it is there copied, and may be referred to.

Bredon is situated in the neighbourhood of Tewksbury, eminent for its stocking manufactory; of course we have from sixty to eighty frames employed in our different hamlets; these engage about one hundred hands; this certainly enlarges the poor rate, which I balance by our having an excellent market at Tewksbury, as well for our large, as our small productions. This manufactory is in high credit, and I have lately heard some of the principal factors say, they could not supply their orders so fast as they received them.

We excel in nothing so much as setting beans; it is superior to drilling in its most perfect state. Our inclosed lands make cattle fat.

Mend the roads, and inclose the fields—these are the best means of improvement. We are tolerably far north—shew us an advantage, and our eyes are open. We have an excellent example for perspicuity and attention, at the head of our county; and I have it from the best authority, that the late Judge PERROTT used frequently to say, that Lord COVENTRY had brought a million of money into Worcestershire, from his skilful exertions in making the roads through the county.

The breed of cattle and sheep are not sufficiently attended to, though we have amongst us most excellent, as well of sheep as cattle.

In the upper part of the county, near Lord FOLEY's and Sir EDWARD WINNINGTON's, particularly amongst their tenants, are as well-bred cows and oxen as the country of Hereford* can produce. Messrs. WHITCOMB of Orleton, NASH of Homcastle, PROSSER of Shelsley, HARRIS of Stamford, WALKER of Burton, HAYWOODS of Clifton, WEST of Hom Bridge, with many others, breed most excellent cattle. In the breed of sheep, Messrs. PENRICE of Sawford, WAKEMAN of Beckford, PARROTT and OLDACRE of Fladbury, GREESLEY of Salwarp, CHARLOTTE, BLUCK, and OSBORNE, of Elmly, RAYER of Cutsdean, ORSBORNE of Broadway, with many others, breed most useful, and excel in this district.

* Mr. LACHMERE will average more than thirty pounds each, for thirty oxen, all bred in Herefordshire, in this year's sale. Mr. WESKUM's oxen, who averaged upwards of forty pounds each, for fourteen, in last December, were all Herefordshire bred; and I am now in possession of an ox, bred in that county, remarkably large, and well made. I purpose keeping till next December, when I will measure and weigh, and perhaps take a drawing off; and if I should, will send it to Sir JOHN SINCLAIR, for the inspection of the Board.

To conclude, I have read with great pleasure, the PRESIDENT's Address to the Board of Agriculture, on the 29th of July, 1794. I credit all the positions therein stated, to their utmost extent. A speedy and general inclosure bill, would ripen all these schemes for the improvement of the country, as rapidly as could be wished for.

NUMBER III.

The following intelligent observations, by Mr. OLDAHER, of Fladbury, will be found to merit attention.

The soils near Fladbury are various, such as deep sand, light sand, gravel, loam, clay, a red marl, and by the sides of the Avon, and other rivers and brooks, are meadows of a loamy clay.

The lands in this neighbourhood are principally occupied by tenants; the uninclosed are in general small; the inclosed farms are mostly from sixty to one hundred and fifty acres, but there are some from two to five and six hundred acres each.

The fields of the uninclosed parishes have a certain quantity always in tillage, but the inclosed farms are employed sometimes in tillage, and sometimes in pasture, according to the judgment of the farmer, the nature of the soil, &c.

Red and white clover, and trefoil, are mostly cultivated in equal quantities, five pounds each to an acre, with about two pecks of rye-grass (the latter I have myself given up, till I find I am wrong, and use the other sorts). This mixture is used in the inclosed farms, where there is a small portion of old pasture, these seeds answering the end of hay or pasture, and enables the farmer to summer a considerable stock of cattle, sheep, &c. It is usual to let the land lay with it as long as it will bear much grass, which will be about two or three years;—if the land is not too poor, it is then broken up with the turf plough (more particularly described hereafter), and planted with beans or pease, after which it is sown with wheat at the second ploughing; then fallowed for barley, and down with seeds again. But where a farm has a sufficient quantity of meadow, and old pasture land, the tillage is generally divided into four equal parts; one part being, after a fallow, sown with barley, and the half of it is sown with red clover only, principally for tying off with horses upon the land, or eaten green in the stable. The first practice is a most excellent preparation for wheat upon clay lands; the other half of the barley piece is sown with beans, pease, or vetches, according to the soil, or necessity for more green food; as the eating of vetches upon the land is of infinite service to the following crop; so that the second crop may be clover, vetches, beans, or pease, or any one or more. These are followed by a wheat crop. The custom is, in this system of husbandry, to put all the manure on that part of the barley stubble

stubble that is not designed for clover and vetches, and ploughed in for beans or pease. Sheep are the principal stock raised in the neighbourhood: the Leicestershire sort are the most prevailing: I know of none that would answer better here.

Here is no land watered, except about eighty acres belonging to **GEORGE PERROT, Esq.**; nor do I know much land capable of that improvement.

Wheat, beans, barley, pease, oats, and vetches, the latter principally for green-food, are the crops in general raised.

The uninclosed lands are cultivated differently, according to ancient custom, such as crop and fallow, namely, wheat every other year. This custom prevails only on poor land, which lies a great way from the fold-yard, so as to get no other assistance, except sheep penning. In some other fields, they get two crops and a fallow, namely, wheat, and then beans and fallow. The above custom is mostly practised on strong heavy lands; but the prevailing practice, almost generally, is three crops and a fallow; upon the latter follows barley for the first; beans, pease, vetches or red clover, for the second, and wheat for the third. Upon all light lands that will bear treading with sheep, turnips are cultivated in great perfection. Clover answers well upon all soils that are not very poor; and turnips have much improved the light lands.

I never yet saw a farm, clean and in good heart, unless summer fallowing was practised after every succession of crops.

The produce of the fold-yard is almost the only manure used in these parts. Lime is too dear to be generally used. I never saw much improvement from that article in this neighbourhood.

The distance from great towns is too great to get manure from, of course it is not much a practice to sell hay or straw; but great attention is paid to make the most of what the farm produces, into dung-hills, which is conveyed annually on the land, some farmers putting it on the fallows after Midsummer, and ploughing in at the second ploughing; others, upon the barley stubbles for beans, &c. The last practice I think the best.

The sort of plough used here, is the common strait heavy plough, without wheels, as is peculiar to the Vale of Evesham. Many other sorts have been introduced, but none found to answer. Six-inch wheeled carts, and three-inch wheeled waggons, like most other countries.

Horses are generally used; oxen sometimes, and drawn single, like horses; but I never knew a farmer in the Vale of Evesham, but what was tired of them after a few years practice.

Wheat is sown as early after the the first of October as the rains fall to make it wet enough; but if not sown till Christmas, I have frequently seen good crops. Beans and pease are planted the latter end of February, and beginning of March; barley in April; winter vetches the latter end of September; and summer vetches in March, April, and beginning of May, for a succession. I have always had the best crops from winter vetches. Harvest commences from the beginning to the twentieth of August; varied by the season, soil and climate.

The land is mostly inclosed. In regard to new inclosures, I have known farms not worth the old rent after an inclosure; and I have known others, nearly double the rent; but this must arise from the high or the low price they were lett at before the inclosure took place. It can hardly be said to have paid common interest for the expence attending it in this neighbourhood. Where a proprietor had several small farms, to save the expence of dividing into small pieces, and repairing a number of small old buildings, by turning the whole into one, he may perhaps find an advantage. How far such practices, which must tend to depopulate, and in a measure monopolize, are a national concern, I will not pretend to determine. In poor lands, when inclosed, the quality and quantity of corn will increase; but in good lands, the quality, when the fences are grown up, will not be so good, and the quantity no more. There is certainly a great opportunity to improve stock, in an inclosed farm, which cannot be the case in uninclosed fields and commons.

The size of the inclosures very various, proportioned to the size of the farm: most farmers wish to have their land divided into eight or ten parts, or more, according to the nature or difference of soils. The expence of first planting and fencing on each side the quicksets, will be about nine shillings the perch (of eight yards running); and the expence after, in cleaning, repairing fences, &c. will be about three shillings or four shillings more; but many farms have a sufficient quantity of materials, without buying, for post and rails, which will be a saving of their value. It is reckoned to take about five years rent to inclose a farm.

In the Vale of Evesham, and neighbourhood, the inclosures have very much decreased population, and every year will have still less occasion for labourers. This will be more the case, where the farms are converted from small into large ones; but where large commons and waste lands only have been inclosed, it must tend to increase population.

There are some few open fields in this neighbourhood, but I do not hear of any application to be made for dividing them.

The extent of waste lands is but trifling, and those are depastured with sheep, cows, or horses, a certain number to what is called a yard-land, which number varies according to an old custom: some parishes stock sixty sheep to a yard-land, and others perhaps forty; and where a farmer has not a proper quantity of each sort, one cow or horse is reckoned equal to three sheep; so that he stocks with either sheep or cattle, as is convenient to him.

The waste lands are capable of little improvement, as they are generally the poorest lands, that will not pay to till, but are almost the only support of the flocks of sheep, which the farmer keeps for the folding upon his common tilled land. This custom is an excellent manure for one crop, and is the only advantage made by keeping of sheep in this way. The commons might, many of them, be improved by draining, fencing, &c. as the lands generally lie low, and are much subject to rot in wet seasons. The poorest part of them are often covered with furze or thorns, which are useful in many respects. I remember to have seen an Act of Parliament that passed about twenty years ago, that empowered a certain majority of occupiers, in number and value, to oblige the minority to certain regulations for the term of six years, which Act I thought a

very good one, and gave an opportunity of making considerable improvements in open fields, such as in draining, fencing, &c.

The rate of wages is by the day, twelve-pence and beer, or fourteen-pence and no beer;—the time of working from six till six, in summer; in the winter, as long as they can see to work. Corn is threshed by the bushel, namely, wheat at four-pence; barley about two-pence halfpenny; beans two-pence. Grass is cut at twenty-pence an acre, and six quarts of beer. Labour in hay-making is sixteen-pence to eighteen-pence, and beer. Harvest wages are thirty shillings and maintenance; or three pounds and beer. Instead of beer, I give five pecks of malt and one pound of hops, to each labourer.

Draining is not much practised in common land, but pretty much in inclosures: in clay soils, turf is used; in others, wood or stones, which is most convenient; the latter is most lasting.

Paring and burning is but little practised here, as there are but few old lands to break up, and there are but a few roots in new turfs to make ashes. If a farmer has a piece of strong turf, he generally plants it with beans or flax, at one ploughing; with a turf plough, a sort of plough that has two shares, one before and above the other: the first takes off about an inch of the turf, and turns it into the furrow after the horses; the next share, about eighteen inches behind, throws on the top of the turf a clean furrow of mould, about five inches thick; by the next year, the turf is sufficiently meliorated, and is then sown with wheat. This practice is preferred to paring and burning.

Here are some woods, which are regularly cut, in rotation, leaving young trees, for timber, at certain distances; but the exact practice I am not acquainted with.

The price of provisions here, is at present, beef at three-pence halfpenny per pound, mutton four-pence halfpenny, wheat seven shillings and six-pence (thirty-six quarts to the bushel), barley five shillings and ten-pence, beans six shillings. The measure varies in this neighbourhood considerably; it appears to me to have been caused originally by the quality of the produce of the country, one farmer wishing to sell for as much money as another. In the Vale of Evesham, and about the neighbourhood of Worcester, where the quality is fine, the measure used is thirty-six quarts; but on the Cotswold Hills, and all cold climates, such as parts of Herefordshire, Shropshire and Wales, it is thirty-eight or thirty-nine quarts, which extra measure hardly makes out for the deficiency in quality, especially in some wet seasons, it being late ripe on these cold lands, is thick skinned of course, and never dry, nor of a good colour.

I will here beg leave to give my opinion, that a general regulation by weight, would be much preferable to equalizing the measure, for several reasons; but a most principal one is, it would be a much fairer way to set an assize of bread from, than measure; for I know very well, that a bushel of wheat in Worcestershire, of the growth of 1791 or 1793, will make on the average, seven pound of dough, or six pound of bread, more than the produce of 1792. I am not able to say, whether provisions are likely to rise or fall.

The public roads are in pretty good order; but the private roads, in general, are much neglected. I know of no improvement in the making of roads, that has been lately found out.

The farm-houses and offices are not on a good construction ; and the situation almost generally ill chosen, which is often attended with great loss to the occupier. Houses, &c. for feeding cattle in winter, should be encouraged, as such feeding adds greatly to the dung-hill, both in quantity and quality.

The leases commonly granted, are for twenty-one years ; but many, according to the circumstances and opinion of the proprietors. Covenants ought, and generally do, restrict tenants from getting more than three crops without a clean summer's fallow. I do not see how the rotation of crops can be laid down in leases ; for often, when a wheat or bean crop have failed in spring, from the grub or otherwise, I have seen spring crops put in successfully upon one ploughing. But the farmer should be confined to spend the whole produce on the premises ; manage and depasture properly, and to leave the farm, at the expiration of his lease, in such a situation as will be a fair entrance to a succeeding occupier.

I have seen two farmers upon the same sort of soil, manage their land very differently, according to the custom of each county ; yet both live well, and both get money.

The large farmers have certainly a turn to improvement : the small ones have not an opportunity ; but there are fifty inventions introduced, and the sensible farmer unfortunately sees hardly one that will answer. Proprietors granting leases for a sufficient length of time, would tend to excite a spirit of improvement in the occupiers, not only in the tillage land, but in the grass land and planting. The latter practice I am sorry to see neglected ; as in most farms there are some pieces, or placks, that might be fixed for some kind of plantation. The improvement of old quickset fences, I think the country more behind in, than in most others.

The improvement in stock, is rapidly increasing—I mean in the beast and sheep kind : the breed of horses (that most useful of all animals), leaves room for great improvement. If gentlemen of property would but keep stallions of the true useful sort, for their tenants and neighbours, paying for the same, the breed might be improved. I will not pretend to point out what sort would be more useful, only, that the clean legged, free from hair as much as possible, are easily kept clean, and are most healthy.

There is one inconvenience much against improvements in farms, where the old inclosures run very small, as from one to three or four acres each, intermixed ; and the owners not inclined to accommodate each other, which I am very often sorry to see ; but when they are disposed to do, circumstances often occur to prevent it, such as part belonging to leasehold property, and part freehold. An Act of Parliament, appointing Commissioners for such purposes, in general might remedy it.

NUMBER IV.

OBSERVATIONS, BY MR. LUCAS, OF HANBURY, ON THE KEEPING OF LAND
IN PERPETUAL TILLAGE.

THAT ruinous system of keeping land in a state of constant tillage, without any intermediate rest by pasturing, is but too common throughout the county of Worcester (making only a few exceptions). The disproportion of tillage converted into a temporary pasture for two or three years, in order to renovate and acquire fresh nutriment by the dung of sheep and other animals, is only from ten to twelve acres in one hundred; whereas it ought, and should be, forty-five in one hundred, at least; but much better it was fifty. The system pursued, is not the same in all parts of the county, but changes as the soil varies in different districts; yet all manifestly tending to the same destructive purposes (the impoverishment of the land). It is customary on the heavy soils, after a summer fallow, to sow wheat for a first crop;—the second crop, beans: the ensuing winter, after the beans, the land is prepared for barley; and on the third crop of barley, seeds are sown, generally a mixture of clover and trefoil, but sometimes only red clover. The ensuing summer the seeds are mown for fodder, and sometimes, and unfrequently, they are mown a second time for seed. The Michaelmas following, being the fifth year from the fallow, the land is broken up, and wheat planted thereon; and so on progressively, for any number of years. The consequences of this system of husbandry is, the land becomes exhausted of its natural goodness; foul, impoverished, subject to all sorts of weeds, and a regular diminution of its value, in so great a degree, that supposing, for one instance, a farmer was put in possession of a certain quantity of land, in so high a state of cultivation as to produce from twenty-five to twenty-seven or twenty-eight bushels of wheat per acre, and so in proportion of barley, oats, beans, &c. and he was allowed to pursue the aforementioned plan of management for twenty years, there is not the least shadow of a doubt, but the produce of that land would be diminished at the end of the term, seven or eight bushels of wheat per acre, and so in proportion of all other grain. And again, look at this system of husbandry in another point of view—if a gentleman is a proprietor of an estate (tillage), occupied by a tenant of the beforementioned description, supposing him to be certain of quitting at the expiration of a limited time, the gentleman has the mortification to find his estate all in a state of tillage, impoverished, foul, exhausted of nutriment, diminished in value, and to the succeeding tenant, incapable of any thing but a general fallow, and a total change in the system of agriculture. In short, very considerable allowances are frequently made, to induce a man to succeed such a miserable sloven and robber.

The real cause of all this mischief, to the land proprietor, to the community, and particularly to posterity, is a very general and obvious defect in the covenant between landlord and tenant, wherein the tenant is allowed almost an unlimited power of ploughing the tillage how he pleases, excepting a few flimsy restrictions, which generally

NUMBER V.

RULES AND REGULATIONS FOR THE ESTABLISHMENT OF A SOCIETY TO BE CALLED THE VALE OF EYESHAM ROAD CLUB.

ARTICLE I. THAT this Society shall commence on the first Thursday in September, 1792, and the members thereof consist of persons resident in the neighbourhood of Bredon Hill.

II. That the members shall dine together on the said first Thursday in September 1792, and in every succeeding month, at half past two o'clock, at the undermentioned places, in rotation, viz.

The first Thursday in September, 1792, Crown in Eyesham.
 The first Thursday in October, 1792, Angel in Pershore.
 The first Thursday in November, 1792, Swan in Tewkesbury.
 The first Thursday in December, 1792, White Hart in Winchcombe.
 The first Thursday in January, 1793, Crown in Eyesham.
 The first Thursday in February, 1793, Angel in Pershore.
 The first Thursday in March, 1793, Swan in Tewkesbury.
 The first Thursday in April, 1793, White Hart in Winchcombe.
 The first Thursday in May, 1793, Crown in Eyesham.
 The first Thursday in June, 1793, Angel in Pershore.
 The first Thursday in July, 1793, Swan in Tewkesbury.
 The first Thursday in August, 1793, White Hart in Winchcombe.

Dinner to be provided at half-a-crown per head, and half-a-crown for liquor, &c. so that the reckoning shall not exceed five shillings each, when the bill is called for, which will be always at six o'clock: any member not attending, to give notice to the landlord of the inn, one week before each meeting, to pay half-a-crown for dinner, which must be provided according to the number expected.

N.B. It is hoped, that the notice required from absenting members will appear necessary, and be cheerfully complied with, for the reason before given; but, although the meetings are proposed to be monthly, it is by no means required that any member should attend more frequently than may be perfectly convenient: there will be no excuse for non-attendance, and the only trouble to be incurred, will be a note to the landlord of the inn, that Mr. ——— will not be present.

III. That any three or more members assembled as aforesaid, shall have full power to transact any business or affairs relating to this Society.

IV. That all who become members, shall accede to an agreement of the inhabitants of Beckford, Overbury, Kemerton and Bredon, entered into the 18th of September, 1788, in the following terms:

"We the undersigned inhabitants of Beckford, Overbury, Kemerton and Bredon, feeling very sensibly the inconvenience arising from the bad state of the roads in our neighbourhood; and wishing to act cordially and unitedly, in the best manner, for the improvement of the said roads, do declare, that it is our intention from this time, to exert our utmost influence, by advice and example, to put the laws relating thereto in strict execution; and for this purpose, we will be ready and willing to serve (at least in our turns), as Surveyors of the Roads in our respective parishes; and we strongly recommend to the parishioners to appoint such persons, as shall be most likely to execute the duties of that office, with regularity, impartiality, and diligence."

Signed, "William Wakeman, John Darke, James Martin, R. Speediman, John Parsons, Henry White, J. Biddle, Roger Parry, William Heekes, William Freeman, Thomas Gibbs, Charles Tidmarsh, John Bricknell, John Alcock, Isaac Nind.

"The above Subscribers give notice to all parishes adjacent, that if the repairs of their respective roads are not more seriously attended to than they have been (the Statute Labour for which, duly performed, will in a great measure be sufficient), they are determined to unite in indicting such defaulters."

That in order to excite the steady attention of the several members of this Society, to the improvement of the roads in their respective parishes, and diffuse a general knowledge of the plan and intent of this institution; these rules and regulations, together with the following advice to Surveyors, shall be printed on a large paper, in the most legible manner, and framed and fixed up in the hall or most frequented room, in the dwelling-house of each of the said members, as well as on the church doors, in the markets, and other places of public resort, in their neighbourhood.

ADVICE TO SURVEYORS OF THE HIGHWAYS, AND ALL PERSONS EMPLOYED IN FORMING OR REPAIRING THEM.

The public roads and highways in many parts of the counties of Gloucester and Worcester, having by neglect, become foundrous and unsafe for travelling, an Association for enforcing the due execution of the Highway Laws, has been entered into by gentlemen residing in the neighbourhood of Bredon-Hill; who wish to draw the serious attention of Surveyors of the Highways, to an object of such importance, and animate them to a prompt and faithful discharge of their duty; and to such of them as are not well skilled in the most essential part of the office, the following easy directions are recommended (adapted to almost any soil or situation).

TO MAKE A GOOD DURABLE ROAD.

The intended road being laid out, the surface of the natural soil should not be reduced to a dead level, rounded from the trenches that are made to carry off the water; it should then be laid with small brushwood (as is cut from the hedges), the twigs lying crosswise the road, or with furze, or both mixed, and upon stones, placing the largest at the bottom, and decreasing in size to the gravel, or whatever small material may be found, having for the last finish to the covering.

N. B. No stone should be used for making or repairing the roads, but such as has been exposed to the weather twelve months at least; as when first taken out of the quarry, it is soft and mouldering.

* * Small stones, which lie in great quantities on some parts of Bredon and other hills, are excellent material, and might be collected and laid in heaps at a reasonable expence, for the use of the highways.

It is also most earnestly recommended to the consideration of such Surveyors, that no road can be well prepared to receive the materials, nor preserved in a good state afterwards, unless the hedges and ditches by the sides of the roads are properly cut and opened, at the usual seasons directed by Act of Parliament for that purpose; and that drains laid in proper situations, for diverting any stream or watercourse that might be injurious thereto; and that unless a sufficient foundation of furze and green brushwood, as abovementioned, be laid under the stones, gravel or other materials, the expence and labour will in a great measure be thrown away, and in no degree answer the intended purpose of public utility and advantage.

Every person (of any observation) must be sensible that the beauty of the country is very considerably impaired by the lopping and pollarding of trees, growing by the sides of highways; and it has been found by experience that the object of preserving the roads by such practice, is not obtained; the obstruction of the sun and wind blowing chiefly, if not altogether, from the hedges being uncut, and often placed upon high banks, which prevent the heat and air from having that good effect which would naturally proceed from them without these hindrances; on the contrary, trees do actually defend the highways from rain in summer; and in winter they can be of no prejudice, being deprived of their leaves during the whole of that season: these considerations are also earnestly recommended to the attention of all concerned in the making or repairing of roads.

It is very evident, that roads are materially damaged by the over-loading of narrow-wheeled carriages contrary to law; and the general Turnpike Act expressly declares, "That no waggon, or other four-wheeled carriage, having the fellics of the wheels of less breadth than six inches, shall pass on any turnpike road with more than two horses; nor any cart, or other two-wheeled carriage, having the fellics of the wheels of less breadth than four inches, shall pass on any turnpike road with more than three horses; on pain that the owner of every such carriage shall forfeit five pounds, and the driver (not being the owner), twenty shillings, to any person who will sue for the same." But however punctually the laws relating to the highways may be observed and enforced, it may be further remarked, that a constant and unremitting attention is requisite, for the due ordering and regulation of the roads; and, that all Surveyors should be careful to cause all obstructions and nuisances to be removed, the ruts and quarters filled and levelled, and occasional supplies of stone and gravel laid thereon, in such manner as to render the surface of the roads smooth, regular and easy, (the neglect of which has been found to be extremely prejudicial and inconvenient): it might therefore be very proper, that each parish should leave a sufficient number of labourers for that particular work; and that each of those labourers should be appointed to take care of a certain portion or extent of road, and to keep the part allotted to him in perfect order: such management would effectually preserve the roads, and prevent the necessity of more expensive repairs, which must otherwise frequently wanting.

If the method prescribed by the general Road Act, of the 13 Geo. 3. for the stating and settling of Surveyors' accounts, was more strictly observed, instead of the manner too generally adopted, of passing those accounts without any previous examination, at the special sessions held annually for the highways, when (by reason of the short time allotted for the business of that meeting) it is impossible for the magistrates to enter into a thorough investigation of such accounts; it might have a very serviceable effect upon the conduct of Surveyors, by compelling them to a more punctual and regular performance of so necessary a part of their duty: it is therefore wished, that the magistrates who attend at such special sessions, would resolve in future, that all Surveyors should render a full and particular account, as well of all work and duty performed by teams and labourers; as also of all assessments, compositions, and sums of money by them received and expended, for the amendment and preservation of the highways.

of the highways within their respective parishes; and that no such accounts be passed at such special sessions, unless it shall appear to have been previously produced at a public meeting of the inhabitants (testified by the signature of at least two of them), and afterwards examined and allowed by a proper magistrate, according to the directions of the beforementioned Act of Parliament; and, in order that all the Surveyors may have due notice of such resolutions, it is proposed, that the same be inserted in the instructions subjoined to their warrants of appointment. It may be reasonably presumed, that the Legislature intended the Surveyors' accounts should be examined by the nearest magistrate, who, from his own observation, or from local evidence, might be able to judge in what manner the duty had been performed.

The gentlemen of the Association wish to have it thoroughly understood, that as they are absolutely determined to exert their utmost power and influence, in putting the laws respecting the highways into execution, and enforcing the same; so they will be willing, ready, and happy, to give every friendly assistance and encouragement, to such as shall conform to their duty in this matter, which is so essential to the comfort and advantage of the neighbourhood.

It is much to be desired that no person will become Members of this Society, who are not really and earnestly disposed to act up to the spirit of its institution, and to embrace every opportunity of promoting its object, which is the improvement of the roads in their respective parishes particularly, and in the neighbourhood in general: to impress this object more forcibly, the following very pertinent observations are extracted from a charge delivered to the Grand Jury, at a quarter-sessions for the county of Worcester.

"Bad Roads are the only blemish and disgrace of this our country; happy beyond every other in the kingdom, in its situation, soil, variety, and plenty of produce, which extends to every necessary of life: why are we, in respect to our highways, behind-hand with almost all our borderers? let us vindicate ourselves from the reproaches of every traveller; not for his sake alone, but our own; for not to mention the loss that all our trade, commerce, and husbandry sustain from the badness of our roads, it deprives the country of its social pleasures and connexions; you too well know that in the winter, when the cheerless season of the year invites, and requires, society and good fellowship, the intercourse of neighbours, few miles distant from each other, cannot be kept up, without imminent danger of their limbs or lives: in general, your Surveyors are negligent of their duties to a shameful degree: they throw the blame on the remissness of the individuals in their district: wherever the fault lies, the fact of inattention is certain; and an evil to which we ought, all of us, endeavour to apply a remedy as far as we are able; by duly enforcing the present laws for the amendment of the highways, until it shall please the wisdom of Parliament to furnish us with better."

THE END.



GENERAL VIEW
OF THE
AGRICULTURE
OF THE COUNTY OF
HERTFORD.

Entered at Stationers Hall.



GENERAL VIEW
OF THE
A G R I C U L T U R E
OF THE COUNTY OF
H E R T F O R D,
WITH OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

BY D. WALKER,
NO. 14, UPPER MARYBONE STREET.

ET Dnt

**DRAWN UP FOR THE CONSIDERATION OF THE BOARD OF AGRICULTURE
INTERNAL IMPROVEMENT.**

LONDON:
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TO THE READER.

IT is requested, that this Paper may be returned to the Board of Agriculture, at its office in London, with any additional marks and observations which may occur on the perusal, *within the margin*, as soon as may be convenient.

It is hardly necessary to add, that the Board does not consider itself responsible, for any fact or observation contained in this Report, which at present is printed and circulated for the purpose merely of procuring farther information respecting the husbandry of this district, and of enabling every one, to contribute his mite, to the improvement of the country.

The Board has adopted the same plan, in regard to all other counties in the united kingdom; and will be happy to give every assistance in its power, to any person who may be desirous of improving his breed of cattle, sheep, &c. or of trying any useful experiment in husbandry.

London, January, 1795.



COUNTY OF HERTFORD.

SITUATION.

HERTFORDSHIRE, or Hartfordshire, is an inland county, bounded by Bedfordshire and Cambridgeshire towards the north and west, Buckinghamshire towards the west, Essex towards the east, and Middlesex towards the south; and situated between the parallels of 51 degrees 37 minutes and 52 degrees 5 minutes north latitude. According to Halley, it contains 451,000 acres.

Rivers and Streams.—The principal rivers are the Lea and the Colne; and these are composed of many inferior streams, most of whose sources lie within the county, and join the principal rivers at different distances from their source. The Lea rises near Leagrave in Bedfordshire, enters Hertfordshire near Bower Heath, and traverses the county in a direction nearly from north-west to south-east, to its conflux with the Stort, about a mile east of Haddesden; then runs nearly south, and continues with that river, for the most part, the boundary of the county towards the east. The Maran, or Mimerum, rises near Frogmore in Hitchin hundred; and with the Beane, which rises near Cromer in Odsey hundred, joins the Lea near Hertford. The sources of the Rib are near Buntingford in Edwintree hundred: is increased in its course by the waters of the Quin, which rises near Biggin in the same hundred, and joins the Lea between Hertford and Ware. From these rivers united, the inhabitants of the metropolis derive a leading comfort of life, conveyed to them by the New River. The source of the Ash is also in Edwintree hundred: it rises near Upperwick, and falls into the Lea about a mile below Ware. The Stort rises in Essex; is navigable from Bishops Stortford to its junction with the Lea, which



is also navigable from Hertford to the Thames. Several other small streams, whose sources are also in Hertfordshire, fall into the Stort, which is principally the eastern boundary of the county towards Essex, from near Bishops Stortford, to its junction with the Lea. The Verulam, Verlam, or Muse river, rises in Dacorum hundred, near Marget-street, and the confines of Bedfordshire, runs nearly south south-east to St. Albans, and by the quondam walls of the Roman Verulam; from thence nearly south, watering some meadows in its course, till it loses its name and consequence near Colney-street, in the river Colne, which is there a small stream, and rises near Kix, or Kits-End, in Middlesex, taking nearly a northern course to North Mims, then north-west to Coney Heath, and from thence nearly south-west to its conflux with the Muse, being joined near the conflux by a small stream which rises near Elstree. The classic Verulam, now under this adjective name (Colne) runs nearly south-west to Watford, then west by south to, and about a mile and half beyond Rickmansworth; and from thence nearly south, till it leaves the county. The Gade, which rises also in Dacorum hundred, near Gaddesden, and the confines of Buckinghamshire, joins near Corner Hall the Bulburn river, which rises near Penley Hall in the same hundred; takes from the junction nearly a south by east direction, runs through Lord Clarendon's and Lord Essex's parks at Kings Langley and Cashiobury, and then nearly south-west to its conflux with the Chesham river near Rickmansworth, and junction with the Colne.

These are the principal streams which intersect and water the County of Hertford in all directions; and as they would unquestionably be of the utmost consequence (if not shackled by mill owners) in watering the adjoining meadows and low grounds, in a county which produces so little natural grass, I considered it my duty thus far to describe them; and shall, in its proper place, point out the advantages derivable therefrom. The nine sister springs of the celebrated Cam at Ashwell, the source of the Hiz near Hitchin, and the sources of other rivers, are in this county.

Canals.—The grand junction canal, from Branston wharf on

the Coventry canal to Old Brentford, where it joins the Thames, enters the county of Hertford above Berkhamsted, and follows the course of the Bulburn and Gade to Rickmansworth; and from thence the course of the Colne, till it leaves the county: and a navigation has been in contemplation from St. Albans, by the Muse and Colno, to join the grand junction canal below Cashio-bury park. Great agricultural and commercial advantages will be derived from these navigable canals, and principally from the first, to this and the other counties through which it passes; and I understand that calculations have already been formed, by which it appears that coals from the great Staffordshire and Warwickshire collieries will be delivered at Crossley hill (the nearest distance from London which the jealousy of a certain corporation will permit them to be brought), at a much cheaper rate than they can be purchased in the port of London.

The proprietors of the navigation proposed to tunnel under Crossley hill, but I now understand the Earl of Essex, actuated by motives of patriotism becoming his high rank, and consonant with his philanthropy, has agreed that the navigation shall pass through his park:—great expence in tunneling will be saved to the proprietors, and of course in freight to the public thereby. By this navigation coals will be brought through Warwickshire, Northamptonshire, and Bedfordshire, into Hertfordshire, as far as the above restriction will permit, at such reasonable prices as will enable farmers to burn lime therewith, for the purposes of agriculture with some prospect of success, and compensation from the crops produced thereby. It is therefore the business of this Honourable Board to investigate the ground of restriction, and remove the same if found injurious to the interests of agriculture.

General Description.—Hertfordshire is deemed the first corn county in the kingdom; and very properly so, for with the requisite advantage of climate, and of the various manures brought from London, to aid the production of the most valuable crops, nearly the whole of the soil is properly tillage land. The uneven surface of the county, varied through its whole extent with hill

and dale, affords natural drainage, and all the various aspects under heaven.

Soil.—The prevailing soil is a strong, red, shelly clay, intimately mixed with flints covering chalk, generally of an excellent quality, which lies at different depths from the surface, and points out to the husbandman a never-failing and unrivalled source of improvement. This soil, and this substratum, the mode of tillage, and the implements used in the culture thereof, will be strongly marked in the subsequent Report.

The remaining soils consist of the various gradations of loam from the strongest to the weakest kind, more or less intermixed with gravel, principally of the flinty sort, and with chalk, which (though there are exceptions to this general rule), may be said every where to obtain, and no where to predominate: a small portion of moor, or peat earth, in the beds of some of the rivers and low meadows adjoining thereto, the quantity and depth of which has not yet been ascertained, nor, as far as I have been able to learn, converted in any one instance to the valuable purposes for which it is adapted: and a soil widely differing from all the rest, very fortunately of no great extent, and confined to one corner of the county, consisting of a hungry clay or loam, full of small blue pebbles, and only fit for the growth of underwood.

These soils (the two last excepted) have been indiscriminately scattered by the hand of sportive nature all over the face of the county; and frequently, very frequently, they may all be found in the small compass of a field of four or five acres. Uniformity of soil is scarce any where to be met with, except in the low flat lands by the rivers sides, and in dells, the staple thereon, frequently to a great depth, having been washed down from the uplands by the heavy rains from time to time for ages past, and there deposited when the vehicle which had conveyed it thither had evaporated.—The made soils in the neighbourhood of market-towns and villages are out of the question.

Strata.—Having thus attempted to give the only general description of the infinitely varied and mixed soils of Hertfordshire which the nature of the case will admit, the now prevailing prac-

ice of sinking pits, for the purpose of chalking the surrounding land therefrom, enables me to give a tolerable idea of a section of the soil, to the depth of 40 or 50 feet. In general, the basis of such section will be found to consist of a deep bed of chalk; the superstructure, an irregular indenture of chalk and earth-pillars; the earth-pillars broadest at top, and narrowing as they descend; the chalk-pillars broadest at the bottom, rising conically, and narrowing as they ascend to the surface:—the chalk-pillars, frequently ascend to the surface, make part of the staple, and the whole extent of the apex is visible in ploughed lands. The earth-pillars have been found to descend 50 feet and upwards, to the no small mortification of the chalk-pit diggers, who are frequently obliged to abandon a pit which they have sunk in an earth pillar, to the depth of 20 feet and upwards, and sink in a fresh spot with better hopes of success.

This general rule admits, however, of many exceptions; the chalk, in several parts of the county, is covered for many acres together with a great depth of earth, which often renders the question of a chalk basis uncertain; and the downs skirting the county towards Cambridgeshire, are for the most part a continued bed of hurlock, or bastard chalk, covered with a very thin staple, producing sweet but scanty herbage for sheep, and incapable of any further improvement.

Soils so widely differing in depth, strength, and quality, in the same farm, and often in the same field, will necessarily require farming implements, particularly ploughs, differing in their strength of construction, though made on the same principle. For this reason I annex drawings of the Hertfordshire plough, and endeavour to show how finely this very simple implement will pulverize, when guided by the best ploughmen in the kingdom; and I wish much I could show, with equal success, the operations of the expert Hertfordshire seedsmen.

Extent.—This county is said to contain 451,000 statute acres. On what data this calculation has been formed I know not; but I much doubt whether any survey has been hitherto made thereof sufficiently accurate to be relied on. A better survey, and

on a larger scale than any yet made, is an object highly meriting the attention of the gentlemen of the county. But this cannot be accomplished, or even undertaken by a surveyor, without very ample and certain encouragement; and as I humbly conceive that the great and leading views of the Board of Agriculture are, to improve the husbandry of the lands now inclosed, promote the inclosure and cultivation of the commons and wastes, and increase the number of useful peasantry, I have directed my attention to these objects; being aware, that to ascertain the exact average of waste lands, or number of inhabitants, does not add either to the one or the other; and that a cursory view of commons and waste lands is too vague a foundation to build a tolerably accurate calculation of future produce and value, when inclosed, subdivided, and improved. When the measure is adopted and carried into effect, the end proposed by that measure will in due time be accomplished.

General State.—Hertfordshire contains 120 parishes, 18 market-towns, and many large villages, principally on the great roads which pass through it to distant parts.

Population.—This county is very populous towards the Middlesex and Essex sides. I bestowed some pains and expence to ascertain the population of the county; but as I could not, without more time than was compatible with my other engagements, distinguish between the constant inhabitants and those whose residence was temporary, and who removed their families to London in the winter, I therefore abandoned a calculation on which I could not rely. The florid countenances of the living, and the churchyard records of the dead, are happy and incontrovertible proofs of the salubrity of the Hertfordshire air.

Made of Occupation.—The general description of the soil of Hertfordshire leads to the manner in which it is necessarily occupied. By far the greatest part being adapted to tillage, and not meadow or pasture, it is so occupied, except what is reserved for pleasure in the parks of gentlemen, and that part also would be more usefully employed in tillage.

A farm, should be of a sufficient size or greatness to afford

constant employ to a team of adequate strength to plough the lands therein. There are many farms, particularly towards London, below this standard; and in general they do not exceed £100, or £120 per annum.—There are a few farms from £400 to £600 and upwards per annum.

What I understand by the word pasture, when applied to land in general, is that sort of land which, in contradistinction to tillage land, has long produced, or if converted to pasture will continue to produce, a sufficient quantity of good natural grass for pasture or hay. The cultivated grasses I understand to be clover, cinquefoil, trefoil, lucern, &c.

The pastures and meadows of Hertfordshire are principally the hedge greens surrounding the arable fields; these are of different widths, from 15 to 20 feet, and upwards: the grass thereon is in general mowed and made into hay; and when the fields to which they belong are fallow, or after harvest, are depastured by the cattle and sheep, and manured by their dung, when they resort to the hedge greens for pasture, or the adjoining hedges for shade or shelter.

Live Stock.—The stock of this county are horses for the plough, milch cows, and sheep, principally ewes. Working bullocks are kept by some gentlemen; very few of these are bred in the county; nor are their breeds further attended to than as they are found to answer the purposes of those who purchase and keep them. A few cart horses are bred in the more distant parts of the county, from mares of the same description, and where a stallion of the draught kind is in more repute than *Eclipse*. The black cattle are the produce of the breeding parts of the united kingdom, Alderney, &c.; the working bullocks are principally bred and broke in Sussex; the sheep are in general from Wiltshire, and the west country: the Welch sheep are purchased for, and kept in parks only. The Hertfordshire farmers derive from the plough the surest and most ample source of advantage and compensation for their industry, experience, and capitals employed in husbandry; their live stock must therefore be bred, and that breed improved, before it comes to their hands. I am of opinion that the

finer breed of milch cows and sheep will not answer their purpose, as their feedings will not suit either.

Swine are a profitable stock in Hertfordshire, and attention is paid to the breed in some parts thereof. Working bullocks, or speyed heifers (for both are wrought), are certainly best calculated for a heavy country and soft roads: I have no wish to enter the lists against those who are bullock advocates, and shall content myself with describing Mr. Casmajor's manner of choosing, feeding, shooing, &c. of oxen or working bullocks, in my answer to question 11th.

Of Water Meadows in general.—Where situations and circumstances suit, the *æ plus ultra* of rural economy is obtained by water meadows; the poorest lands yield an abundant crop by watering only, and the annual return of that crop is thereby insured, while water runs and grass grows.

In Dorsetshire, Somersetshire, Hampshire, and Berkshire, watering of meadows has been long practised. There water meadows are frequently made on the great scale, and the process is attended with considerable expence in the outset, therefore the practice should be well understood before it is even attempted to be carried into execution. The theory and practice are as follows:

Suppose a tract of nearly level land, containing 100 acres, or upwards, declining gently to, and bounded on the lower side by a river, the surface of which is considerably below the level of any part of the land; the owner of this land has a right to pen up the river at any part of its course above the land, where he pleases, to cut an aqueduct from the pen or dam in the river to the land, and to turn thereby all or any part of the water in the river on the land when he thinks proper, or at certain stipulated times.

These preliminaries are absolutely necessary to guard the owner from future interruptions, as the conversion of land into water meadow may be attended with more expence than the land is worth, prior to the conversion.

To ascertain with precision the line and expence of the aqueduct, a level is taken with great care from the upper end and

highest side of the land to be watered, and the line thereof marked at short intervals with stakes, till it cuts the river above where the dam is made, if a more eligible place does not offer a short way higher in the river. The level is then continued, and the line thereof marked in the same manner along the upper side of the land to be watered, as far as is expedient, the stakes show the whole course of the aqueduct before it is cut, and the length thereof, the leading datum for calculation is thereby easily measured and ascertained.

If the line of the aqueduct is to be cut through solid holding earth, and no terracing to be made, or rocks to remove or be cut through, and no dells or highways to cross, either over or under bridges, the expence will then be proportioned to its length only, and the extra expences may be added thereto, when they cannot be avoided. The next datum for calculation is the width and necessary height of the dam or pen in the river; and as the construction thereof may be attended with considerable expence, for which and the other incident expences the water meadows may never compensate, particularly if they are subject to tithes in kind, it may now be easily determined whether there is a proper situation adjoining to any part of the level, and a sufficient fall therefrom for a water corn mill, or any other mill which the manufactures of the neighbourhood may employ, if so, the object is greatly enlarged and may warrant the expence.

I am aware that mills in the hands of gentlemen are not a very eligible estate; but the expence being lessened by the aqueduct, the situation may be let for a long term of years, greatly to the advantage of the owner, who may stipulate with the lessee for the use of the water, when wanted to flood the meadows.

When rivers are flooded early in the spring, and the soil and compost washed down from arable uplands by the floods, the water is thickened, and when spread on level water meadows, deposits the sediment, the soil is enriched, and the quantity and quality of the grass improved thereby. It may therefore be necessary to make a tumbling bay, or low shot to discharge the extra water of the floods from the aqueduct, and prevent the

banks thereof from being overflowed and carried away in time of floods. Along that part of the aqueduct which adjoins the water meadows several sluice frames are fixed, at equal distances, to flood one part of the meadows at a time; the apertures of the frames are made alike, and equal to the column of water in the aqueduct, and the cells thereof laid flush with its bottom. Two sluices fitted to the frames are sufficient, as they may be carried down the aqueduct from frame to frame in the process of flooding. If the meadows, or any part of them, are of a considerable width from the aqueduct to the adjoining river, smaller aqueducts nearly parallel to the first, and as the slope of the ground may require, are made to receive the water when it has passed over the meadows above, and again to discharge it on the meadows below, if necessary, and a bank is generally made along the lower side of the water meadows, at a small distance from the river, to keep the water on the meadows when flooded, and to keep out the water of the river, when it overflows at improper times; this bank, to save expence, may be thrown up by the plough.

The process of flooding is as follows: the water is turned into the aqueduct, and a sluice put into the first sluice frame, small apertures or gaps are made along the lower bank of the aqueduct, from the entrance thereof into the meadows to the first sluice frame, and the water issuing therefrom guided by small aqueducts, or plough furrows, to the higher or ridge parts of the declining meadow, so as to water the whole as equally as possible. When that part of the meadow is considered to be sufficiently watered, a sluice is put into the second sluice frame, apertures cut in the lower bank, between the first and second sluice frame, the apertures therein above the first sluice frame filled up, and the first sluice removed. Thus the work proceeds, till the whole flooding is finished, and I am of opinion that if times and circumstances suit, the meadows may have a second or third drench, so that the water may not continue too long on one and the same part, to chill in early spring the roots of the herbage; the practice will also be thereby rendered more analogous to the sooner

and latter rains, and the other bountiful dispensations of Providence.

This is so far the theory and practice of flooding meadows with water, in situations such as I have described, and such as will be found in nature to offer most commonly for flooding large tracts of meadows (see the annexed Plans of water meadows).

Where the meadows are level, or very nearly so, they are banked round, and the water conveyed to them only: the meadows along small streams, in narrow level valleys, such as frequently occur in Hertfordshire, are watered by making a pond-head, where it can be done at little expence, across the valley, with a sluice in the middle, and bed of the stream sufficiently wide to let the water pass in floods, the course of the stream is straitened and widened to a sufficient distance above and below the situation of the intended dam or bank, which is made with the earth dug therefrom, and from a parallel ditch made a few yards below, to supply what earth may be wanted. The upper side of the dam is sloped in proportion to its height, and covered with the turf from the site of the dam, top of the ditch, &c.; this strengthens the dam and saves the expence of a clay wall. The faces and returning wings of the sluice in the middle of the pond-head are generally built with stone or brick, and may be arched over, if the top of the dam is made sufficiently wide for a road. Aqueducts are carried from the corners of the dam along the higher sides of the meadows below; and when the sluice is put down, the water rises to its level on the meadow above the dam, and runs into the aqueducts; the process of flooding therefrom is as above described. The proper situation, height of the dam, the expence attending the construction thereof, and the number of acres that will be flooded thereby, and by the aqueducts from the corners thereof, are also ascertained by levels taken before the work commences: about 12 acres so situated have been lately flooded by a similar dam or sluice at the Grove Farm, near East Grinstead in Sussex, by Mr. Brooks, the then spirited improver and owner of that estate, and he was led thereto by the remains of an iron forge or bloomery dam, which were formerly common in that

county. I saw the meadow about a month after it had been flooded, and the planks of the wooden bridges across the brook were crusted over as thick as a half-crown piece with the sediment of the muddy water from the arable lands above; which circumstance led me to conclude that there could be no question of the success of Mr. Brooks's method of flooding; I therefore recommend it, in similar situations in Hertfordshire, where the numerous small clear streams thus intercepted in their course, when reddened with the floods from the arable well manured uplands, would deposit the sediment upon, and enrich the meadows so watered.

Navigable canals passing through a level country frequently afford the means of watering considerable tracts of land therefrom at an easy expence, and with little or no injury to the navigation; many acres of meadow ground in the parish of Chertsey, near Weybridge in Surry, and lying between the navigable canal and the old river Wye, are flooded from wooden trunks laid in the bank of the canal, and opened or stopped up at pleasure. I am induced to mention this circumstance that the proprietors of estates adjoining the navigable canals intended to be made in and through Hertfordshire, may take the hint, and stipulate in time with the proprietors thereof, for a supply of water in the flooding seasons.

There is unquestionably great difference in the quality of the water of different rivers and brooks, the clearest water, and water impregnated with metals or semi-metals, are supposed to be the worst; and the water of rivers which pass through manufacturing towns, and are thickened with the soap and lye used in fulling-mills, bleaching grounds, &c. the best. The numerous bleaching grounds along the course of the Stour near its source, and in the parish of Silton in Dorsetshire, afford a very striking instance of the effects of water impregnated with lye made from wood ashes, and a collateral proof that all ashes should be kept dry till they are laid on land as a manure. The yarn or cloth to be bleached is steeped in the lye, and then spread on a part of the bleaching ground previously close mowed to receive it; water is frequently

thrown with scoops from the adjoining aqueducts upon the yarn or cloth during the process, and the lye washed therefrom into the ground; the vegetation is thereby quickened to a degree beyond the limits of credibility, and the grass is cut in succession all over the bleaching ground, when fresh yarn or cloth is laid down to bleach; and the grass cut therefrom daily, is carried and thrown into cribs adjoining the bleaching ground, and eaten with great avidity by all sorts of cattle; the number of milch cows fed principally by the grass thus cut in succession from a bleaching ground, containing four or five acres, is also incredible, and they thrive better on this grass than on any other provender. The ashes, after the lye has been extracted, are first rate manure for cold meadow or pasture land; and the lye, after it has answered the purposes of the bleacher, is carried from the lye vats in water carts, and spread therefrom on meadow land. The aqueducts in the bleaching grounds are supplied from the river Stour, which is there a small mill stream, and being thus saturated with lye from wood ashes, is carried upon and waters a considerable tract of meadows in the parish immediately below Silton. In 1790, I valued a large and fine estate in the parish of Silton and neighbourhood, and have no doubt it has been since considerably improved by the above means. While I was there, I was credibly informed that the water meadows in the neighbouring parish were then rented at three guineas per acre, and that the owner had given the tenant notice to quit, because he did not choose to advance the rent.

The effects of watering in tropical climates are astonishingly profitable, aqueducts are made at a great expence in the islands of Jamaica and St. Domingo, to water the cane lands in the sugar plantations; by this means a crop is insured when the periodical rains fail: if the relations of travellers in China may be relied on, the art of watering lands in this country will appear to be in its infancy; it is said that water is forced up there by engines to the highest hills, and that the whole empire is watered.

Though I am by no means sanguine in recommending the Chinese practice *in toto*, I am notwithstanding of opinion, that in many cases and situations engines may be employed with advan-

tage: the water-wheel of a Dutch windmill throws a considerable stream of water into a canal or dyke, the surface of which is some yards above the level of the country, and of the water thrown thereinto.—We have only to fancy the Dutch canal is an English meadow-watering aqueduct, and the idea is complete.

Water may be thrown 10 or 15 feet higher than the surface of a river, by the simplest of all possible engines, and drove by the same stream from which it raises the water. Suppose a mill-race with five feet fall only, and of sufficient width to pass nearly the whole of a stream of adequate power; two common water-wheels on the same axis, and about four feet asunder, constitute the whole of the moving part of the engine. The diameter of the larger wheel 32 feet, and width proportioned to the power required; the diameter of the smaller wheel 22 feet, with bucket, or close cogs, and about half the width or less of the larger wheel. The axis is so laid upon its gudgeons, that the larger wheel applies to the mill-race, and the smaller wheel dips about a foot into an aqueduct brought from and on the level of the dam; and applies as close as possible, to avoid friction, to a race built with stone as high as the level of the axis, on the reverse side to the mill-race. When the machine is in motion, the smaller wheel throws up a stream of water to the top of its adjoining race, and 10 feet above the surface of the dam. This stream may be conveyed from thence in an aqueduct to water land.

Great pains and expence have been bestowed to give even a temporary verdure to several of the largest Hertfordshire parks. Part of Cashiobury park was dressed in the year 1790 with the following compost: about 15,000 cubic yards of pond mud was mixed, when wet, with good unslacked chalk lime, one load, or 40 bushels of lime to about 20 loads of mud, and laid on the poorest soil in the park, the staple of which is about four inches on chalk. The natural clover sprung up soon afterwards in great abundance; and in 1793, the land so manured was (to use the bailiff's words) a perfect honeysuckle, and eagerly fed off by the cattle depastured thereon. A piece of land by the pond side was manured with the mud only, and planted with cabbages, which

are said to have grown to an extraordinary size and quality. But the droughts of the summer 1794 had completely burnt up the honeysuckle; and about the middle of August in that year, Cashibury and the other Hertfordshire parks were as gray as badgers.

The polite attention of the noble owner of Cashibury park merits my warmest acknowledgments, and every attention I can pay to him and his interests in return; and as I understand the great junction canal will pass through his park, I trust the proprietors thereof will readily accord with the patriotic views of this Honourable Board, in forwarding by every means in their power the watering of meadows along the line thereof.

The water of the Gade is thrown up by an engine, drove by a powerful stream, to a reservoir above Cashibury house. This water may be thrown higher, and in greater abundance, by the same means, and with very little additional expence, upon the extensive level ground on that side of the park next the principal entrance from London, and the Watford and Rickmansworth road; the water may be guided to every part of it in plough furrows, from a reservoir made next the London road and highest part on this side of the park: the carpet would be refreshed, the beauty of the place and value of the feed increased thereby, in the course of a month's watering in the spring; and to prevent the rot, the deer may be confined to another quarter of this extensive park, till a month after this part has been flooded. Here I must remark how finely the drip of a farm yard, when turned on an adjoining meadow, will improve the verdure and crop thereon, however averse a farmer who knows his business may be to suffer the strength of his dung to pass this way; and furnishes a hint to improve the water, by throwing spit-dung, which may be procured from the inns at Watford, or from London, into the reservoir made for the purpose of flooding therefrom. Mr. Benfield's residence at Woodhall park has been too short to make much improvement on the carpet thereon; he has however dressed part of it with unslacked lime, about the 24th of April, 1794, and soon after it was laid on, appearances were in favour of the

practice, though there had been no rains to wash it into the soil. He was then cleaning a large sheet of water; and the great quantity of mud taken therefrom would, if laid on either with or without chalk or lime, freshen and thicken the thin staple on chalk in part of the park. I saw here very good marle dug from the foundation of an enlargement then making to Woodhall. When immersed in vinegar, the fermentation was quick and strong. Nearly half this marle is calcareous (chalk rubbish), and would no doubt be capital manure to light lands, in countries where good chalk is not so plenty as in Hertfordshire: as the calcareous and vitrescent parts of this marle are well mixed, there is little doubt but it would be good dressing for the thin stapled parts of the park, provided a marle pit could be found not *quite* so near the mansion-house. The Beane, or Benefitian river, runs through Woodhall park, is there a considerable stream, and drives an engine which raises water to a reservoir in the highest part of the park; and which may be easily carried from thence in plough furrows, to water any part of the surrounding park. Part of Woodhall park, and an extensive tract of meadow ground below, adjoining the river, may be watered by an aqueduct taken from the pond-head above the stone bridge, and carried on a level along the declivity on the west side of the river.

It has been the practice to chalk meadows and pasture grounds in different counties where chalk is plenty, with very different success; and I apprehend that difference arose principally from the quality of the chalk used. As a proof of this, the low meadows on the Thames and Mole owe their fertility to their having been chalked for ages past, when overflowed by these rivers when swelled by heavy rains, and *encreased* with the finest chalk in Surry and Berkshire. This sediment has been so often deposited on Chertsey mead, that it has now grown to a stratum of several feet in thickness, and the light gravelly adjoining uplands are marled therefrom: I mention this circumstance as an encouragement to promote

Hertfordshire Water Meadows.—In a county which stands in need of every aid, from its numerous streams, to increase the

quantity of meadow hay and latter grass for cattle and sheep, and the dung made by them for the purposes of husbandry.

There are water meadows, properly so called, on the Muse, immediately below St. Albans, and on the Colne, in the neighbourhood of Rickmansworth. The soil of the Muse water meadows is a very thin staple, on a burning gravel, affording the happiest proof of the great benefit resulting from water when so applied. —A fine crop is here produced in the driest seasons from a soil which, without this aid, would produce little or no crop in any; and when the crop of hay is taken off, the water, if turned on for a short time, will insure a luxuriant crop of latter grass. The soil of the water meadows near Rickmansworth differs much; but a considerable part is moor or peat earth, of different depths, on a hungry blue clay.

The watering these latter meadows near Rickmansworth has been considered of such consequence by the owners and occupiers thereof, that they were long the subject of expensive lawsuits with an opulent miller at Badgworth, who deeming himself, and those under whom he claimed, kings of the waters, broke down the dams, sluices, &c. erected for the purpose of flooding, both above and below his mill; and when the question of right was first tried, he was even so lucky as to get a verdict in his favour; but about the year 1790, a jury was found who differed widely in opinion with their predecessors in office; and his majesty of Badgworth mill has since suffered his neighbours to flood their meadows without interruption.

The many streams intersecting this county in every direction, and mentioned in the general description thereof, may undoubtedly be applied to great advantage in watering the meadows and low grounds contiguous thereto, if directed with judgment; but while the question of the rights of mill owners thereon remains in its present undetermined state, few occupiers of such lands, if they had every other encouragement, will be found hardy enough to risk the expence and uncertainty of lawsuits.

The month of March is in general the earliest flooding time; and in that and the succeeding month of April the water, in times

of great floods occasioned by heavy rains, is generally the best, and thickened with the compost washed down from the ploughed uplands. The water meadows are again flooded, if necessary, after the hay is taken off.

Grains cultivated.—Nearly the whole of the county being, as already mentioned, properly tillage land, the grains principally cultivated are wheat, barley, and oats; and I must here remark, that there is scarce a farm of any extent in the county which does not contain land peculiarly suited to each species.

Rotation of Crops.—The rotation of crops in the county of Hertford, in common with those in all other counties in the kingdom, differ widely; for instance, it is a common practice in some parts of the county of Hertford, to take after turnips two succeeding crops of barley; the first without, and the second with seeds: this is neither good husbandry, nor practised by those who have a permanent interest in the soil; and who of course will farm better. It is therefore material to point out the leading motives which actuate the occupiers of land to this difference; and when the evil is known, it will lead to a remedy which will apply wherever the evil is found to exist.

An occupier of inclosed land on lease for a term of 21 years, will begin by improving his land, and pursue a course of husbandry calculated to keep it in a proper state of manurage, till within two or three years of the expiration of his term, because it is his interest so to do; and for the same reason he pursues a very different conduct towards the end of his lease; he then takes such crops as will turn most to his advantage; and the mischief done to the land he occupies, by cross or over-cropping, he puts entirely out of the question, if he has no prospect of a renewal of his lease or a continuance on his farm at the end thereof.

The improvements of a tenant at will, on such land, are very feeble, and calculated to repay the improver in a short space of time, none of his manures or improvements are of the lasting sort, and he may truly be said to farm from hand to mouth.

An occupier of common field land, let his tenure be what it

will, has too narrow a field for improvement, or extended rotation of crops, therefore little can be expected from him.

And in all cases a rigorous exaction of tithes is sure to damp the ardour of improvement; for I consider the improvement of land, and a rotation of crops, properly so called, to be synonymous terms; land may have too little of the dunghill, or too much.

When the farmers or occupiers of lands at large, in a county or district, have the reputation of farming well, it is to be understood that they avail themselves of all the advantages of their situation, be it what it will. The situation, valuable *substratum*, vicinity to the metropolis, and industry of the inhabitants, are the great sources of the fertility of the county of Herts; and it is to be presumed, that where nine tenths at least of lands so circumstanced are properly tillage lands, and have been constantly under the plough time out of mind, farming, comparatively speaking, will be well understood; and that in soils naturally very indifferent, a great length of experience has pointed out the necessity of *new* intervening meliorating crops, to keep or throw those thencefore used at greater distances in point of time from each other. I shall be perfectly understood when I say, the Hertfordshire farmers have found by experience that the succession of clover, their best and most valuable meliorating green crop, has hitherto been too quick on one and the same field, where the rotation has been as follows, viz. wheat on clover ley; oats, turnips, on a fallow of course; and barley with clover seeds; the clover cut twice, or the second crop fed off.

In every part of a county where the soils so widely differ in one and the same field, and where almost every species of manure is procurable and used, this failure of the clover crops is certainly not imputable either to the soil or the culture. Whether nature requires a longer interval of time to recruit the species of nutrition peculiar to the nourishment of different seeds and plants, or what other cause is to be attributed to this failure of clover crops, which are sown to give an interval of rest between crops of white corn,

are questions, in my apprehension, still involved in uncertainty. I did observe this year (1794) very different crops of clover on nearly the same soils, in different and distant parts of the county of Hertford: in the mixed soils, on the top or apex of a chalk pillar, surrounded by strong, shelvy, clay land, the clover had missed; a whole patch, containing three or four poles of land, was bare, and the surrounding clover tolerably good;—this I imputed to the dryness of the season. In other parts I have seen similar spots carry the best crop of clover; and in general where the clover had missed or failed on most soils, it had missed or failed in patches, and the rest of the crops tolerably good; which induced the growers to let the clovers stand for a crop, and not break them up, and sow another crop; though they were aware that where they had no clover, they would have little or no wheat the succeeding year, as the ground there would be beggared by weeds. I saw a crop of clover, in the parish of Sheephall near Stevenage, on strong clay land, lying to a good aspect and drainage, and ploughed in (three-step) lands about nine feet wide, with deep furrows between them. The plant on the lands was in most places but indifferent, though on a good holding soil; and in the bottom of the furrows it was most luxuriant, and overtopped the rest:—here the plant had certainly most moisture, but it might possibly have got hold of a maiden soil; for this species of clay is good productive soil to the centre, if it holds so far; and when taken from depths of 50 and 60 feet, and exposed a short time to the air, it will produce most luxuriant crops. Mr. Whittington, an excellent and improving farmer, who holds a large farm in this parish, chalked about four years ago (1790) land in the neighbourhood, and of the same sort with the above; and part of it bore a most luxuriant and even crop of clover.

The other meliorating and intervening crops introduced in Hertfordshire, and used by the best farmers, are pulse, buck-wheat, cinquefoil, lucern, trefoil, and sometimes ryegrass or bents; and rape seed is frequently sown among turnips, or alone, to be fed off. Buck-wheat, though of late introduction, is becoming more prevalent as an intervening crop; but I apprehend, if used

as a meliorating crop, it should be cut green, and given to working cattle: horses, I understand, thrive upon it. Cinquefoil thrives on the poorest lands; and as it is a ten or twelve years crop, may be considered a substitute for meadow hay; but it will not last so long if sheep are suffered to bite the plant too close. Lucern is a valuable crop, and excellent food for milch cows, or working horses: it requires a strong deep soil; and the Hertfordshire strong shelvy clay, if drained to take off the superabundant moisture, suits it very well. It is generally sown in drills; but the rector of Hatfield has sown it broad cast, with very good success. An acre or two of lucern is a valuable crop near a farmhouse; a portion of it may be cut daily during the summer months, and thrown into cribs in a farm-yard, or carried into the racks in the stables, to be eaten by the cattle and horses; and the whole piece of lucern may be cut four times a year at least; but cattle should not be suffered to go upon it.—In very dry seasons, this valuable plant should be watered by hand. Trefoil hay is said to be excellent food for hunters and running horses. Some years ago, a great part of the meadow ground in Lime Grove paddock, near Putney, was manured with the dung from capital livery stables in London; and this year the crop of grass on the land so manured was three-fourths trefoil, the seed of which is supposed to have been brought on in the dung.—This may serve as a very necessary hint to improve the quantity and quality of the grass on the Hertfordshire parks.

Potatoes, in light sandy soils, are a good and profitable intervening crop, and may be continued for two or three years successively. They may be planted on mixens made on the hedge greens, and hoed, which will clear them of weeds, and produce a valuable crop before the mixens are removed to manure the adjoining lands intended for a wheat crop.

Mr. Hill has a field of uniformly light sand loam, on the ridge or highest land in the parish of Kempton, containing about two acres and three-quarters; this field was cropped with potatoes in 1794 when I saw it, and the year before produced about 400 bushels per acre, worth on the average 1s. 9d. per bushel—£35

per acre: every attendant expence about £5;—£30 clear. He fed his milch cows and store pigs with the potatoes in winter: the cows gave abundance of milk, but not cream in proportion.

The manures brought from London to the neighbourhood of Dunstable are soot, ashes, furriers' clippings, horn shavings, and sheep's trotters. On the strong lands, about two bushels and a quarter of wheat, and four bushels of barley or oats, are sown per acre. On light lands, from two and a half to three bushels of wheat, and five ditto of barley or oats per ditto. Rotation of crops.—Fallow, and dress or fold for turnips, which are fed off by the sheep in winter. Barley on one tilth sown about the 12th of March following. Barley and clover about the same time next year. Depasture the clover from harvest to Hollantide. Sow ashes, and sometimes soot, on the clover at or before Lady-day next; cut the clover twice, and sow wheat in the autumn following on one tilth, and harrow it in; and oats or pease after the wheat. They never sow the same land with pease but once in nine years, and consider an interval of eleven years better. They fallow for turnips after oats, and sow wheat after pease.—If the crop of turnips or pease fails, the rotation is of course broke into. The following rotation is also practised, viz. winter tares, turnips, wheat, barley, and clover; then wheat.

Light lands, or such as in the language of farmers are apt to run foul, are cleaned by fallowing, to get rid of couch or black grass, which is the worst of the two if possible; here the rotation is broke into. The wheat seed season of 1794 has been very unfavourable for strong clay lands, and many acres of such land which have been prepared for wheat must receive a spring crop. The turnip crops have failed the same year almost every where, though sown in the county of Hertford a second, and often a third time, and now sown with wheat or tares for sheep feed; therefore, though the maxim of keeping crops of white corn, which always stand to seed, and of course draw the land most, at as great distances from succeeding each other as possible, by intervening and meliorating crops, and varying these meliorating crops, for the same reason, is admitted to be good and well founded; one and

the same rotation of crops is as little applicable to all soils and all seasons as the drill husbandry.

Crops of pease are considered by the Hertfordshire farmers to require an interval of nine or ten years between the crops on one and the same field. All the pulse crops, particularly pease, have failed in 1794; the best crops I have seen this year were those mixed with beans or rye, what is called in some countries, mash-lane. I am of opinion, that beans on such land as suit them, is an excellent meliorating crop, if hoed and kept clean, and if the crop pays the expences only attending the seed and culture thereof, a sufficient profit will accrue from the following crop of wheat; the beans may be planted in rows or drills crossways to the furrows by women and children, and by that means be more easily hoed, and require less seed; sheep may be turned on the land without injury to the crop when about two or three inches above the ground, they will eat the weeds, and not touch the beans. I therefore beg leave to recommend this meliorating crop and the planters thereof to the practice of the Hertfordshire farmers, and protection of this Honourable Board.

no In strong clay lands beans are the meliorating crop, and if hoed twice, the ground may be as well cleaned with this crop as with turnips, and a wheat crop succeed, to be dressed in the spring if necessary; a crop of winter tares for sheep feed may succeed, then wheat again, sown in the autumn following, the ground being previously manured with spit-dung, which lasts longest on, and suits best this sort of land. To vary the meliorating crops, clover may be sown on the wheat crop: the lighter lands are best suited for barley and turnips, and such lands require a greater variation of crops; two crops of white corn should never succeed each other on light lands, if it can possibly be avoided, and as such lands are the theatre on which the expert Hertfordshire farmers exhibit the powers of sheep folding, top dressing, and their whole class of expensive foreign manures, the use and application of such manures must be first accurately described, and substitutes pointed out where they cannot be procured, and a rotation of crops on lands so managed, will naturally follow.

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Fallow—While weeds continue to grow and increase in the best cultivated lands, fallowing will be practised in Hertfordshire and elsewhere, where farming is understood, till a substitute less expensive and equally successful in destroying weeds is discovered. Here the fallows generally succeed the crops of oats, and are thus made: the land is ploughed up in the autumn to be mellowed by the winter frosts, and lies in that state till the lent corn is sown in the succeeding spring; it is then ploughed again, and if full of couch and black grass, torn to pieces with harrows, and the couch, &c. collected in heaps and burnt; it then remains untouched till the seeds of the weeds therein, or the greatest part of them have vegetated, and is then ploughed again, and harrowed if necessary, and the season will permit, and the remaining couch collected and burnt. The last ploughing is the most important, and should be made a short time before the crop of wheat is sown, when all the remaining seeds of weeds have vegetated, and before any of them has seeded; the grain then sown and well harrowed in, will have the start of the weeds, thus as much destroyed as possible, and a spring dressing, if necessary, will enable it to keep them effectually under. Fallowing thus made in favourable seasons renders fallowing in future less necessary.

Manures.—The subject becomes *now* interesting to society, and to all mankind—a new field opens for the culture and improvement of lands hitherto held barren to the generality of seasons, and when the practice of the Hertfordshire farmers is perfectly understood, much will remain for speculation, which that practice will excite,

Hertfordshire is justly deemed the first and best corn county in the kingdom, though the soil therein is much inferior in point of natural fertility to many other counties; for notwithstanding its vicinity to the metropolis, its many large and populous market-towns and villages, famed villas, and great and much frequented roads, leading to the distant parts of the kingdom, the average rent of the lands therein does not exceed 12s. per acre.

A particular description of the great variety of manures made use of in Hertfordshire, and the different effects of each, would

open a wide, and to more distant farmers, an unimportant field of discussion. I consider it my duty notwithstanding to mention them separately, and endeavour to point out substitutes for such of them as are attended with the happiest effects, and cannot be procured at greater distances from the metropolis. That I may be clearly understood, I shall distinguish the manures by the names, domestic and foreign, and such manures as are sown on the growing crops in the spring, I shall call spring or top dressings.

The domestic manures are such as arise from the soil, or are produced by foreign provender, such as oil-cakes, &c.

Chalk.—This capital manure, for so it truly and incontestably is, when applied to strong clay and binding land, differs widely in its qualities. The best chalk, when laid upon the land in large pieces and exposed to the frost, soon slackens or pulverizes, particularly if saturated with rain water, when the frost begins to act upon it, the dimensions of the pieces of chalk are much enlarged, and altered to the shape or appearance of the tops of fine large cauliflowers, and when handled fall into impalpable powder; when immersed in vinegar or the vitriolic acid, a strong and quick ebullition ensues; the calcareous and efficient parts of most marles will be found on analyzation to be chalk rubbish, or fossil shells.

The different gradations in the quality of chalk for the purposes of agriculture, from the best sort above described to the hurlock or bastard chalk, may be distinguished by the above criterion. Where chalk can be found at any reasonable depth, say 20 feet under the strong red Herefordshire clay, this single circumstance enhances the value of the soil more than land owners are aware of, and the most experienced Hertfordshire farmers agree, that chalking lands so circumstanced is the best mode of culture they are capable of receiving.

The method pursued in chalking such land is as under, and the persons employed therein follow it as a trade: a spot is fixed upon nearly central to about six acres of the land to be chalked, here a pit, about four feet diameter, is sunk to the chalk, if found

within about 20 feet from the surface; if not, the chalkers consider they are on an earth pillar, fill up the pit, and sink in fresh places till their labour is attended with better success. The pit from the surface to the chalk, is kept from falling in by a sort of basket work made with hazle or willow rods and brushwood, cut green and manufactured with the small boughs and leaves remaining thereon, to make the basket work the closer. The earth and chalk is raised from the pit by a jack rowl on a frame, generally of very simple and rude construction: to one end of the rowl is fixed a cart wheel, which answers the double purpose of a fly and a stop; an inch rope of sufficient length is wound round the rowl, to one end of which is affixed a weight which nearly counterbalances the empty bucket fastened to the other end. This apology for an axis in peritrochio, two wheel-barrows, a spade, a shovel, and a pickaxe, are all the necessary implements in trade of a company of chalkers, generally three in number. The pitman digs the chalk and fills the basket, and his companions alternately wind it up, and wheel its contents upon the land; when the basket is wound up to the top of the pit, to stop its descent till emptied, the point of a wooden peg, of sufficient length and strength, is thrust by the perpendicular spoke in the wheel into a hole made in the adjoining upright or standard of the frame, to receive it. The pit is sunk from 20 to 30 feet deep, and then chambered at the bottom, that is, the pitman digs or cuts out the chalk horizontally, in three separate directions; the horizontal apertures being of a sufficient height and width to admit of the pitman's working in them with ease and safety. One pit will chalk six acres, laying on sixty loads on an acre.—If more is laid on, and to the full extent of chalking, viz. 100 loads, then a proportionable less extent of land than six acres is chalked from one pit. Eighteen barrowfulls make a load, and the usual price for chalking is 7d. per load, all expences included; therefore the expence of chalking, at 60 loads per acre, is £1. 12s. 6d; and at 100 ditto £2. 18s. 4d.; as the chalk is considered to be better the deeper it lies, and the top chalk particularly, if it lies within three or four feet of the surface very indifferent, and only fit for

lime, or to be laid on roads, gateways, &c. the chalkers must be directed to lay by the chalk for the first three or four feet in depth, to be applied to the above purposes, or if not wanted therefore, again thrown into the pit when filled up, and also to pick out the flints from the chalk before it is carried on the land, for if they are not narrowly watched they will chalk with both.

Mr. John Hill of Coddicot, to whom I am much indebted for his good offices, farms upwards of 1200 acres in the adjoining parishes of Coddicot and Kimpton, a considerable part of which is his own estate; he has chalked many acres of land, and approves much of the practice; he chalked a field of strong clay land in the autumn of 1793, laid on 60 loads to an acre, and the chalk where the pits were sunk lay about 10 feet from the surface. I viewed this field the 7th of August, 1794, it had borne a crop of pease since it was chalked, and was then under the plough preparatory for a crop of wheat: the chalk was good, and the land appeared to work well, though the chalk was not then thoroughly incorporated with the soil. Mr. Hill never lays on more than 60 loads of chalk on an acre, this he finds will not only make the land work much better and with less strength of cattle, but also, with a light coat of dung, or spring dressings occasionally laid on to quicken the vegetation, produce abundant crops for 10 years; he then chawks again with equal success. As I may have occasion again to quote Mr. Hill and his mode of farming in the course of this Report, sorry I am that the ignorance of another enables me here to put him and the consequences of his improvements in a strong point of view. The average rent of land in these parishes is about 8s. per acre, though that rent is certainly too little; the rector impropriate of part of the land which Mr. Hill occupies, formerly let his tithes on lease, and the composition exacted by the lessee never exceeded 2s. and 3d. per acre for all the land under the plough; this lease expired in 1793, and the rector employed a surveyor to value the land in his titthing, and to settle the future compositions to be paid to him for seven years. Some land which Mr. Hill had lately purchased, lay in half acres and small pieces intermixed in a common field with the lands of

a farmer, who was as competent to farm as the surveyor to value, and had beggared himself and his farm, though his own property. The surveyor fascinated by the appearance of the crops produced by Mr. Hill's management and spring dressings, valued the tithe thereof at 6s. and 4d. per acre, and his neighbouring farmer's at 1s. and 6d. though there is not a shadow of difference in the natural quality of the soils in each; and some of Mr. Hill's lands of the same quality, which he had not then dressed, were valued at 1s. and 6d. also. The farmers of lands within this tithing have in consequence rejected these strange compositions, and are determined in future to slacken in their improvements thereof, leaving it to the rector to resort to tithes in kind, till experience has taught him to be more reasonable.

Experience also points out the strong red clay as an excellent manure or mixture for burning gravel, light sand, loam, or soils where the chalk predominates, when found contiguous thereto. In sinking for chalk, and particularly for water through this clay soil to depths of 40 and 50 feet and upwards, the heaps raised from the pits, and of course covered with the lowest soil dug therefrom, when exposed to and mellowed by the air for a short time produce most luxuriant sow-thistles, rising like a thick wood, and for some time checking the vegetation of other plants, till the maiden strength of the soil is exhausted; this proves that every inch of the soil is good and fit for vegetation, from the top to the bottom, let it be ever so deep. The light lands contiguous to this soil have been covered therewith in many instances with success, and very different soils in the same field have thereby been rendered more uniform, and mended for ever afterwards. I have heard of one or two instances in the culture of this clay land where the top soil, which had been weakened with a long course of tillage, was thrown down, and a fresh soil thrown on the top of it. This is said to have been effected in the following manner: a plough calculated to make a broad and shallow furrow was followed immediately by another in the furrow of the first, with strength of construction, and a team to draw it, adequate to making a deep furrow, and throwing the under on the top of the upper

soil, and the land immediately afterwards chalked on this tilth. But here I must remark for the information of land owners, that no farmer in his senses will attempt these lasting and expensive improvements without a sufficient length of term both of his land, and composition for tithes, to protect him; and I much fear that the progress of improvement in husbandry of this sort will be very slow, till the improving farmer is enabled to make a sure bargain with both landlord and rector.

Dung.—The next species of manure to be mentioned is that which is made in the farm-yards, from the dung and stale of the cattle kept and foddered therein, and the straw, helm, &c. with which they are fed and littered. That this manure may have every advantage, the yard in which it is made should be formed like the palm of the hand when extended in a horizontal direction, lowest in the middle, the fluid part will thereby remain to assist in rotting the solid part of the manure, and when absorbed thereby, be carried together on the land intended to receive it. The general practice of the Hertfordshire farmers is to throw up the dung, which is, or ought to be, so made into heaps (or clumps as they call them) till it has heated sufficiently in their opinion to kill the seeds of weeds intermixed therewith, then to carry it on the land, and spread and plough it in directly afterwards; for if a shower of rain should intervene between the carrying it on, and spreading, the succeeding crop will be strongest and rankest where the dung heaps lay. The reason assigned for this practice is, that the vegetation produced thereby is much quicker, and attended with less expence than from dung incorporated or mixed with earth in mixens; but the best farmers, and even they who adopt the former, admit the latter practice is best, particularly when light burning lands are to be manured, for light burning lands, in the language of farmers, eat up dung very fast; but when the dung is mixed with good mould (maiden earth) if it can be got, and turned two or three times, the seeds of the weeds will be destroyed, and when carried on the land will mend the staple for ever.

Mr. Hill keeps many horses, and one team for the pupose of drawing timber only, in which he deals largely ; his horse-dung is thrown into a pit, and from thence carried in the winter on pieces of waste land, where there is a staple of good earth, or on places where the drift of roads have collected, mixed in layers with the earth or drift, and turned twice before it is laid on the land: the rector of Hatfield mixes his dung with the staple on the hedge greens ; in short, this practice of mixtures or mixens is followed by all good farmers who have a permanent interest in the soil, and it gives more even crops, and for a longer time than the first-mentioned practice.

Composts.—It is the practice of some farmers to put layers of earth alternately with dung, as it is made in farm-yards, and then turn and mix them in the yards before the mixture is carried on the land. But these mixens are made with a view to futurity by those who have a term of years to protect their improvements, and where the rectors are satisfied with reasonable compositions. I valued a farm in the parish of Ashwell, and in an adjoining parish in the county of Cambridge, the 12th and 13th of May, 1794, in the occupation of an industrious and improving farmer, who kept his lands in as good condition as they could reasonably be expected in a common field state ; about 260 acres of this land is in Ashwell, for which he paid Mr. Whitbread, the rector impropriate, a composition of three shillings per acre ; about 20 acres in the adjoining parish of Great Morden in Cambridgeshire, did not appear to me to have equal justice done to them : the farmer's man who attended me gave the following very satisfactory reason. " The rector of this parish has for some years taken tithes in kind, and my master has never since suffered the dung cart to travel over the shire baulk."

The spit-dung, if clear of the seeds of weeds, is best calculated for strong heavy land, impervious strata (see *Drains*, page) the effects of the London spit-dung, or dung equally good, may be seen to an inch in such lands, for three or four succeeding crops. The mixens or mixtures of spit-dung and good mould,

or strong earth, are laid on light gravelly land, or where chalk or sand is the predominant soil, on all pervious strata. The mould is saturated with the fluid, and mixed with the solid part of the dung, the seeds of weeds therein have vegetated and been destroyed by the turning the mixen, and the staple of the land is thereby thickened and mended for ever. The eligibility of this practice is pointed out by the reverse; the Hertfordshire farmer, who lays his spit-dung on light lands, takes care to spread and plough it in as soon afterwards as he possibly can; but he is sometimes caught out: a heavy shower of rain falls upon his dungheaps, and washes the strength of the dung into the land; and the sites of the heaps are very visible in the succeeding crops. Pigeons and rabbits' dung are also procured in small quantities. The dust or scrapings of highroads is excellent mendment for meadow land, particularly if the roads are mended with limestone, and this manure, if mixed with and quickened by lime or dung, is equally good for ploughed land. The last and not the least of domestic manures, is sheep's dung: this most important stock to the Hertfordshire farmer, let the breed be what it will, derive their subsistence in the spring, summer, and autumn, from the clover leys, hedge greens, meadows, and pastures (if any), fallows and crops on the ground, where they may be turned on without injury thereto; at night they are folded on the fallows and other lands to be manured by their dung, in the winter they are folded and fed on turnips, winter tares, and other food provided for them. The dung of sheep is considered to be among the best manures for light lands, and carried on at little expence. Without this aid the state of agriculture, even in the well cultivated county of Hertford, would be much inferior to what it now is. While the ewe thus materially contributes to the promotion of agriculture, she yields a lamb in the spring, and a fleece in summer, and when old and toothless she is fattened (made meat of) in the autumn, by that second or third crop of clover which she has helped to raise.

The foreign manures are principally brought from London. Spit or horse dung is not carried above 12. or 14 miles from

thence; the market-towns in the county supply the rest. The following are perennial or lasting manures, and generally laid on light land; *viz.* boiled or calcined bones, sheep's trotters, furriers' clippings, horn shavings, leather cuttings, woollen rags, and soap boilers' ashes: the unburnt bones are broke into small pieces, and the woollen rags are also cut or chopped into small pieces, and all, except the last, throw off an annual coat of manure: the the unburnt bones, which are generally boiled, and the fat therein collected before they are sold to the farmers, are said to last as a manure for 10 or 12 years; but I am of opinion that the manure continues while a vestige of the bones remains; the exact period of duration I shall leave as a bone for such critics as may be weak enough to quarrel with opinions founded on observation, and content myself with quoting a case or two. On the high ground in the parish of Ashwell, and adjoining the road from thence to Baldock, are the vestiges of a circular encampment in the manner of a Roman stadium, and about a mile from the *Icbnield Way*: the soil is a very thin staple, on hurlock or bastard chalk, and which at the depth of 10 or 12 feet is good building stone, and much resembles the Tattenhoe stone. The fosse and mound have been levelled and ploughed in several parts; and there human bones have been uncovered and mixed with the soil: it has been remarked that the soil so mixed produces the best crops. These bones are certainly no proof of Roman sepulture, but Roman coins and pieces of altars with mixed characters thereon, such as are supposed to have been cut by the Greek sculptors in the Roman cohorts, are said to have been found here. If the bones were Roman, it is very possible the grave diggers were not. I saw among these bones the upper part of a human skull, but whether it was the remains of a *Κεφαλή*, a caput, or a Danish, Norman, or English head, exceeds the limits of a conjecture. The next case is more limited. The face of the country about Stour Head is marked with the indelible tread of mighty armies: here the great Alfred is said to have reconnoitered the Danish camp in the habit and character of a minstrel, and soon afterwards fattened these his titnings with the blood of his enemies. Where the bones of

the slain are now visibly mixed with the soil, it is the opinion that vegetation is thereby promoted. All these bones are now much broke, and very light and porous. I am aware that substantial reasons may be given to establish the utility of bones to land, after they may be supposed to cease as a manure.

Top Dressings.—The spring or top dressings are the leading features of the Hertfordshire farming, and consist of soot ashes, malt dust, and oil-cake dust or pulverized oil-cakes.

The soot and ashes are principally brought from London, the malt dust from Ware, Hertford, and other places where great quantities of malt are made, and the oil-cake dust from the different oil-mills in the county and neighbourhood. The soot of the best quality costs in London from 6d. to 9d. per bushel; but this article is much adulterated with cinders and ashes.

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The ashes are the produce of the ash or dust-holes in London, and is a collection, when brought from thence, of coal cinders or ashes, wood ashes, whole or very often calcined oyster shells, sweepings of floors, &c. bones and rags. These are carried by the scavengers to their dust or ash hills, and there sifted and sorted. In the process of sifting, the bones, rags, &c. are separated into their different sorts, the larger coal cinders or breeze, are reserved for burning bricks, drying malt, &c. and the smaller breeze for mixing with the brick earth, to facilitate the making and burning the place bricks: the ashes which pass through the sieves are the Hertfordshire top dressing, and differ much in their qualities, the lighter the better, as they contain more wood ashes, and have been kept dry. But a few years ago, the assessments to the scavengers was a considerable burthen on the inhabitants of London; the case is now directly the contrary. The parish of Marybone then paid about £. 500 per annum; the contracting scavenger now pays the parish £. 1050 per ditto.

not fit

The soot is in general used on the wheat crops which have had no previous manure; it is laid in heaps on the crops in winter, and sown in the spring; the other top dressings are housed and kept dry till used. Hitherto very little attention has been paid by the scavengers either to the sorting or preservation of the ashes

from wet, and the farmer owes the goodness of those he uses to chance. The ashes made in the houses of the more opulent inhabitants of London are the best both for the maltster, brick-maker and farmer: the breeze therein is better, and it generally contains more wood ashes, as the practice of late has been to lay junks or pieces of dry elm timber on coal fires, to draw them up, and the ashes are also kept dry till carried away by the scavengers, who, in collecting them, should direct their servants or dustmen, to fill the same cart with such ashes only, and to lay them under sheds till they are sifted, sorted, and again removed by those who use them.

These top dressings not only supply the want of previous manure, but also when crops are sickly and backward in the spring, occasioned either by bad seed times, frosts, or other causes, are attended with wonderful success, and enable the crops to vegetate quickly, and cover and protect the soil on which they grow from the ensuing droughts of summer. To their almost magical powers the Hertfordshire farmers are principally indebted for their never failing crops. Without entering into chemical analysis to discover the cause, they are satisfied with the effects, and therefore continue to enlarge upon the practice, though attended with considerable expence. The provident farmer lays in a stock of dressings to answer contingencies, and provided with this treasure, he can remedy the evils of bad seed times and seasons. These top or spring dressings are peculiarly applicable to poor, light, sandy, and gravelly lands, and of course to the production of the specifically heaviest corn, and put such lands more on an equality in point of annual value with stronger and richer soils. Happy would it be to more distant farmers, and agriculture in general, could an adequate substitute to the Hertfordshire dressings be procured at an easy expence, and the application of that substitute perfectly understood.

I am decidedly of opinion, this substitute is to be found in many parts of the united kingdom, and particularly in Scotland, in great abundance, and is, peat or turf ashes, kept dry in ash-houses constructed for that purpose, and made fire proof; the

practice of Berkshire and adjoining counties containing peat earth, points out the use and great value of this substitute, it is also to be found in some parts of Hertfordshire.

The average price of the Hertfordshire dressings is as follows; oil-cake dust £.1 per quarter, to dress a statute acre will cost about £.1 5s.; malt dust 10s. per quarter, an acre requires about 40 bushels £ 2.; the carriage of the ashes is the principal expence, but it is presumed an acre, on an average of the county, will cost to be dressed with ashes, about 10s. but this depends much on the situation and quality of the ashes.

Peat Ashes.—The quantity of peat ashes used to an acre in Berkshire is from 15 to 20 bushels, and in proportion to the strength of the ashes, the price I now forget, but presume it cannot be less than 10s. An accurate description of the manner of cutting and drying peat, and preserving and using peat ashes, in such parts of Berkshire and Hampshire as they are found and made, and where their effects as a top dressing have been long ascertained, and in high repute, would contribute much to the promotion of this valuable practice elsewhere, particularly where peat and turf is the common fuel, and where the ashes cost nothing but the trouble of keeping them dry, and sowing them on the crops in the spring. The qualities of peat and turf ashes differ much in all countries. The opinion that the peat ashes of one county only are fit for top dressings is a mere joke, invented by interested farmers, who possibly never saw any peat ashes but those they use. In the valley below the Gattons, about Red Hill and Hooly Park, near Ryegate in Surry, there is as good peat as any in the kingdom, but the great value of peat ashes is not known there. In the valley which runs through Hooly Park, there is peat earth of considerable depth, this was lately drained, and the brook there carried under a brick arch of great length; the peat earth dug out of the drains &c. was burnt and spread on the made ground and meadows in this valley, and has greatly improved it: there are top dressings in this valley and neighbourhood to the whole parish of Ryegate for half a century. I have often lamented the ignorance or obstinacy of farmers, who

have ample opportunity of availing themselves of peat ashes; and neglect them. I will give a striking instance. At and in the neighbourhood of North Meoles, near Ormskirk in Lancashire, there is a whole country of peat, and how deep this soil is God only knows, for the horses which plough thereon wear *pattens* to keep them from sinking to the bellies : here I was not long ago deluded, by my ignorance of the country and a *team in pattens*, to attempt riding over ploughed ground to inquire my way. The parish of North Meoles contains about seven thousand statute acres ; two thirds of which is very light, level, sandy soil, lying between the peat ground and the sea, the air of which, and a very little dressing, produces crops of fine barley and clover in dropping seasons on this very light soil. The common fuel of the farmers and numerous cottagers is peat, though pitcoal is plenty and cheap in this neighbourhood ; but the peat ashes are thrown on the dunghills, and never carried on the land till the salts are completely washed out, and even then, are here considered to be good manure as far as they go. Surely no where are the means of improvement more ample, more applicable, or less attended to than in this parish ; and it is to be hoped, that the giant pace of enterprize and improvement in this neighbourhood will not long overstep the Berkshire practice. The rectory of North Meoles is now worth £. 500 per annum at least, and is increasing in value. An open drain of great width and length is perfected through that and the neighbouring parish into the sea, with locks to keep out the tide, and scour the channel between high and low water marks, by the spirited and praise worthy exertions of Mr. Eccleston. This drainage lays at least 500 acres of peat land dry, which was formerly covered with water : and subordinate drains are now making into the great drain, to render the peat land arable without the assistance of pattens. At what an easy expence might this light land be doubled in value, the peat thrown up from the drains might, when tolerably dry, be shovelled in heaps and burnt, and ashes in abundance be stored up in ash-houses for spring or top dressings, or sown on the peat soil to improve and increase the grass thereon. The best and most valuable inter-

vening crops for the light lands in Meoles are clover and potatoes ; for which last article a ready sale is found at Liverpool, from which it is distant about 20 miles, 18 of which is water carriage by the Leeds and Liverpool canal.

Peat Earth.—I have seen peat earth carried as a manure on light, burning, gravelly land, which had been beggared and left by a bad tenant ; it cooled the land and much improved it. An industrious and improving farmer had, at great expence, drained a piece of flat land, which had been time out of mind flooded in the winter, and the clay loam thereon was covered with peat earth of different depths. After ploughing and manuring the land, he laid down about 12 acres of it to grass, about two years before I saw it ; as the then general appearance and quality of the grass thereon was not likely to compensate for the great expence he had incurred, he requested me to tell him what I conceived would mend it. I was at that time walking near one of the wide deep ditches he had made, and observing with attention the striking difference of the herbage adjoining thereto ; for about 30 feet in width, the ground was covered with natural clover ; the clay loam thrown from the ditch had been spread so far and mixed with the peat earth by the plough. I drew the farmer's attention to this circumstance ; he admitted the justice of the remark, wondered this circumstance of fertility produced by the mixture of these soils had not struck him sooner, and was happy to find he had the means of improvement so near at hand.

Grain, or seeds of any kind, if sown in and covered with any soil, in mere sand, in which there is sufficient moisture, will ferment and vegetate ; barley, when immersed in water in the process of malting, vegetates and ferments, the bud or acrospire afterwards rubbed off, is the malt dust, and one of the Hertfordshire top dressings ; therefore if grain or seeds are sown in the early spring, and before the summer droughts set in, there is no doubt but they will vegetate in the poorest soils, and without any manure, and that vegetation will maturate if supplied with a proper quantity of vegetable food. If this vegetable food is lodged in the ground prior and preparatory to the sowing of the

crop, it may in conjunction with a warm dropping season prove too much, and the crop run to straw; and in a dry spring season the crop be too light. The spring 1794 was remarkably mild and seasonable, and brought the crops which had been sown in any reasonable time very forward; little was to be apprehended from the ensuing droughts, the ground on which the crops stood was covered and well protected therefrom, insomuch that very just apprehensions were entertained that the crops would contain much straw, and little corn, which the ensuing dry summer prevented; so that in most counties the crops are in the hands of fate and the seasons; in Hertfordshire they are in the hands of the farmer, if the season has been unfavourable, and if a crop of wheat or barley is sickly, in a few hours he administers an almost infallible remedy with his own hands. The top dressings come in time to supply the want of previous manure, and little is to be apprehended from an over-luxuriant crop, frequently the consequence of too much of the dunghill.

The Hertfordshire top dressing practice has of late found its way into Surry, and some parts of Kent bordering on the Thames, as far as Sittingburn, and in that neighbourhood; but I understand the London ashes are apt to heat in the vessels which bring them down, and as this must be occasioned by moisture, they of course have lost great part of their virtues before they are used. The principal fuel of the inhabitants of Shaftsbury in Dorsetshire is wood, coals are burnt in the inns and houses of the principal inhabitants only; the sheep's horn-shavings and cuttings of the button-mould makers are mixed with the ashes. Some intelligent farmers in the neighbourhood avail themselves of the Hertfordshire practice, and sow this mixture on their crops, and which is now kept dry and sold to them by the inhabitants. The principal part of the fuel of the dairy farmers in Buckinghamshire, and adjoining counties, is dried cow-dung (cow clats) and the rest wood; the ashes if kept dry are capital manure for meadow land: they throw them as they are made on the dunghill, or sell the wood ashes to pot-ash makers—but all dairymen are wretched slovens: I have seen a few, but very few instances of

dry ashes being sown on crops in the neighbourhood of great towns in England, and hope in future that practice will be general wherever ashes of any sort can be found. I was several years ago in the city of Amsterdam in Holland, the principal fuel of the inhabitants there is peat or turf, with which that country about the Harlem-meer abounds. An ash tub or vessel standing at every door early in the morning attracts the notice of a stranger, and I understood the ashes made daily in every house are put into a tub at night, and carried and put by the door in the street to be emptied, and the ashes taken away by the scavengers next morning; and that these ashes were carried in vessels up the Amstel and Y rivers to manure arable lands. The principal fuel of most of the towns in Scotland, and particularly of the city of Aberdeen, is peat; the large annual revenue of that corporation is principally expended in decorating the environs of the city. The magistrates of Aberdeen have it amply in their power to appoint scavengers to collect the dry ashes, and to direct their uses in agriculture, and in the improvement of the barren tracts of land in their neighbourhood, to promote the growth of barley and clover, which most assuredly may be accomplished by this top dressing and sheep folding. The further we proceed north, the greater the necessity of top dressing, to counteract the late seed times and cold spring weather. The climate of the Orkneys and the other small islands is milder than the northern part of Great Britain; but the almost continued day for nearly a month together at Midsummer, during which the earth has scarce time to cool, renders top dressings, to enable the crops to cover the lands on which they grow, and protect them from the droughts, absolutely necessary.

I have seen wheat and pulverized oil-cakes sown together from the same drill machine, and I then conceived that one at a time would have been better, first wheat and then oil-cake powder; my reason for this opinion is; as the due regulation of drill machines can only be determined by the regularity and sufficiency of the grain left by them in the drill furrows on inspection, and before it is covered with earth, a mixture of oil-cake dust would:

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render that criterion less certain. The Hertfordshire top dressing practice also warrants my opinion, that the oil-cake dust sown from the drill immediately on the line of the crop in the spring, and particularly if the crop is sickly, would give a phil-lip to nature at a very critical time, and enable it to cover the ground, and protect it from the ensuing droughts of summer, a caution by no means to be overlooked, particularly in light burning soils ; for the Hertfordshire top dressings most assuredly come in aid of the crop when much of the strength of the spit-dung has evaporated, or been washed by the rains into the soil, beyond the reach of the roots of the crop. The very idea, however, of so closely connecting the grain and the manure, without carrying it into execution either way, has in my opinion great merit, and warrants me to point out a substitute for drilled oil-cake dust, where that species of manure cannot be procured.

That I may avoid the very shadow of partiality, sometimes imputable and applied, not entirely without reason, to gentlemen of the northern part of the kingdom, I shall retrench myself behind Farmer Ducket.

The uniformly light sandy soil of Esher was reserved for the genius of Ducket to farm with advantage, by a process unknown till he invented it : but this process has unfortunately been transplanted into very different soils, and there attended with very different success. Had the fertile invention of that heaven-born farmer followed, a different process would have been adopted and pursued. Notwithstanding my respect for this prince of the drill husbandry, the custom of others deludes me into unwarrantable liberties, but, I trust, with better intentions, and induces me to transport him, in idea, to the light soil of the shire of Moray in Scotland, where, I conceive, he would be completely in his element : there, I fancy I see him drawing with one hand from under his corn stack, his light, simple, drilling wheelbarrow, and in plain modest language, delivered with that perfectly intelligible frankness and urbanity which are natural to him, instructing his northern neighbours in the use and application thereof. Thus, would he say, I trim my brushes and apertures when I sow wheat ;

thus, when I sow beans, &c. &c.; and thus when I sow *peat ashes* on my crops. He would then show them his skim ploughs at work, cutting the thin turf, and throwing it under their light staple to rot, instead of getting rid of it by a *practice* of which I hope they know nothing, and may for ever remain in ignorance. He would teach them to take three crops from one ploughing, that their light land may not be too much pulverized.

I am credibly informed, that near 50 years ago, the then occupier of a farm called *Carmount*, and very indifferent soil, on a branch of the Grampian hills in Kincardineshire, in Scotland, kept the ashes of his peat and turf (his only fuel) dry, and sowed them on his barley crops. This practice is still remembered, but, unfortunately, not practised by the neighbourhood, though attended with great success.

The heath on Ashdown forest in Sussex is cut with sickles and hooks, and stacked in the farm-yards, by some of the neighbouring farmers; the yards are littered therewith in the winter, and when rotten it makes good dung; the turf on which it grows is the principal fuel of the neighbouring cottagers, and the ashes thereof, if put on when dry, is the best dressing for their cold clay pastures and meadows.

Implements of Husbandry.—The Hertfordshire plough is on a very simple construction, with one handle; the line of traction is easily adjusted, and the ploughman, while he is in the act of pulverizing the ground very finely, walks bolt upright. The ploughs of the strongest construction for ploughing the strong flinty lands, or breaking up clover leys, have the share and heel of one piece of wrought iron: the heel is truncated to receive and protect the wood work from friction, and the beam is thickest at and about the mortise of the coulter, where the greatest stress lies. The lighter ploughs are similar in construction, excepting as to the heel. The harrows are in general smaller than in other countries; and the waggons and carts in general light and well made.

Ploughs of various constructions, threshing and winnowing machines, and other implements of husbandry are introduced from time to time into this county, as well as other counties, to gratify the

no see

*The Hertfordshire Share is better
for plowing up strong land than
other in England*

whim of the moment. I applied by letter to the patentee of the threshing machines, and would have annexed a drawing thereof if I had obtained his permission.

Oxen or Horses.—Horses are in general made use of. Oxen are used by some gentlemen, and Mr. Casmajor in particular, who has taken some pains to improve his breed, as follows: he applies to the London cowkeepers, and bespeaks the calves of some of their handsomest cows, these are sent to him as soon as they are calved, and brought up by hand, which renders them very gentle, and are generally, like their mothers, handsome and well shaped. He had his first bullocks from Sussex, broke to his hands, to these he yoked his young bullocks, who soon became tractable, and so gentle that they are shod standing; he gives his bullocks not so much hay as they can eat at a time, and they chew the cud at the intervals of feeding, by which means their food is better digested, and less hay is consumed, with equal or more benefit to the bullocks. I saw about a score of his yearling and two year old bullocks grazing together, they had all the marks of strength, and were very handsome. In strong heavy lands, ^{the} team of bullocks, either alone or mixed with horses, are very useful, and they are much easier kept than horses, and at less expence; but in light, stony, and gravelly soils horses are much better.

Seed Time and Harvest.—The lent corn seed time is from about the middle of March to the first of May; and the wheat seed time from soon after Michaelmas till towards the end of November.

Land Inclosed or Open.—The land is generally inclosed, though there are many small common fields, or lands lying intermixed in small pieces, the property of different persons, which are cultivated nearly in the same way as inclosed lands; the larger common fields lie towards Cambridgeshire.

By the inclosure of lands, rents are frequently nearly doubled, and the land when inclosed is worth, in many instances, double the inclosed rent, as the tenant can then crop and improve it as he pleases, instead of its being fallow every third year, which is

generally the case in common fields of considerable extent. In some uninclosed parishes, such as Ashwell, the farmers, by agreement among themselves, sow clover amongst the lent corn, and each farmer takes a certain piece of land lying together, containing 20 or 30 acres, and incloses it with a dead fence, which he removes for fuel, after he has had the crop and sheep feed, and shortly before the land is again ploughed for a crop of wheat. When common fields are inclosed, the commons and wastes or unknown lands appurtenant thereto are also inclosed, and again so divided that each proprietor has his allotment lying together, and as convenient to his homestall as possible in the village, which is generally near the centre of uninclosed parishes; or it may be more eligible to the largest proprietors to have an allotment at one side of the parish, and build a new farm house and offices thereon.

The old inclosures in Hertfordshire are generally proportioned, as in other counties, to the size of the farms in which they lie, and when small holdings are thrown together, many of the subdivisions are grubbed up and levelled: and if again separated, new subdivisions are made for the convenience of the occupiers. In poor hilly countries the inclosures are in general small. The inclosing fences are white thorn or hazle, or a mixture of both, intermixed with elm and other underwood.

There are, I believe, no instances to be given of inclosures decreasing population, except where the lands inclosed are convertible and converted to meadow and pasture; such inclosures have a tendency to decrease population, as a great part of the labour attending ploughed land ceases; but in all other cases, inclosures not only increase population, but are productive of additional food and labour, for that increase. The inclosure of such of the Hertfordshire commons and wastes, as will be more productive in an inclosed state, will increase population, as they are tillage land.

There are several small common fields in this county, or lands of different proprietors, lying intermixed in small pieces, and open to each other, but these are mostly, by agreement among the

owners or occupiers, cultivated nearly in the same way as in an inclosed state: were exchanges to take place, there is no doubt but such lands might be cultivated to more advantage. I have not understood that any inclosure or division is proposed.

Commons.—There are several small commons and wastes from 20 to 50 acres, and some considerably larger, the whole may contain 4500 acres: great part of these are the sheep downs skirting the county next Cambridgeshire, and other similar sheep downs producing sweet pasture on a very thin staple. These sheep downs, if not overstocked, are valuable in their present state, as they afford pasture for sheep in the spring and summer, and the sheep are folded every night on the light land fallows adjoining, and manure them with their dung. It is the opinion of woolstaplers that the wool of sheep so fed, is longer in the staple and finer in the thread, than of those fed in inclosures and better land. The common near Marget-Street contains about 600 acres, part of which is said to be in Bedfordshire; this is in general good land, and worth from 12 to 15 shillings per acre per annum; the other commons and wastes, time would not permit me to examine with that attention which could warrant me to give a decided opinion of their value, they are mostly poor, gravelly, or chalky soils. Ashwell cow common contains about 150 acres of good land.

To ascertain the advantage resulting to the public from the inclosure of common fields, commons, and waste lands in general, the prevailing arguments against inclosing must be seriously considered; and if it shall appear that any description of persons have been injured by inclosures hitherto made, that injury may be avoided in future inclosures. And first,

The injury said to be sustained by the poor.

This leading argument, like Aaron's serpent, swallows up the rest, and leans so strongly to the side of humanity that the best minds are soonest led away by it; I will venture to say that it has hitherto been in a great measure upheld by this characteristic bias of the country.

The poor here meant are cottagers having common rights, *

*no longer more rights by
inclosure except for
See the other side p. 52.*

and labourers or servants employed in husbandry, and if the inclosure of common fields is considered in one narrow point of view only, the practice will appear to lessen the labour of the poor; for ten, or any given number of acres lying together, are cultivated in a shorter space of time, and with less labour and trouble than the same quantity of land lying in separate half acres and roods, and scattered over a large common field. It will even be admitted, that in many cases three teams will plough the same quantity of land in an inclosed state, which would require four teams in an open field state; the labour of one ploughman, driver, and team in four would be sunk by the inclosure, though the land when inclosed may be doubled in value, and the loss of labour would not end here, admitting that the land to be inclosed is properly tillage land, for the injury would descend through the ploughwright, blacksmith, to a whole team of horses, &c. &c. This land when inclosed will require hedging and ditching, the turnip crops thereon hoeing, the second crops of clover cutting and making, one third more of the land constantly cropped will employ more weeders, and the occupiers of the land be better enabled to pay their labourers their wages.

It must be admitted, notwithstanding, that when the land to be inclosed is proper meadow or pasture land, that is, would be of more value if converted to dairy or grazing farms, than continued under the plough, a conversion of this sort would materially affect, and does, wherever it happens, materially affect the poor, who are tied to their parishes by the poor laws, and cannot emigrate with their families in quest of bread. The scanty allowance of a parish to alleviate the wants of starving children, is a poor compensation to an honest hard working father, for the loss of that labour by which he had thenceforth cheerfully sustained them, and some palliative should be applied to all these heart-breaking cases.

The capital machines of late invention and unrivalled excellence applied to the staple manufactories, though at first complained of, have added in a tenfold ratio to the labours of the

infant poor; the energy of the manufacturer, the enterprize of the merchant, the comforts of peace, and the sinews of war.

The next item to be considered in the catalogue of injuries is, in my apprehension, of a much more serious nature, and requires the deliberate investigation of the most consummate abilities before a remedy can with safety be applied; let it be my humble office to point it out.

To almost every common field, common, or waste within the kingdom there are cottage rights annexed; how these rights accrued, whether by sufferance or otherwise, is now out of the question; they are grown into *prescription*, the great landmark of the sons of the soil, the fulcrum of the best poised constitution that human talents ever formed, and which must be touched with due caution.

It will readily be admitted, that the advantages derived to cottagers from this right is in most cases merely ideal, while the public sustains a serious loss by lands of this description not being either at all cultivated, or cultivated to the best advantage.

Nearly the whole of the parish of Ashwell is uninclosed; abounds with cottagers, having common rights over a very good cow common, containing about 150 acres, a great number of wide baulks and wastes interspersed in the common fields, and the run of the fallow fields in one of the largest parishes in the county of Hertford. The cottagers of Ashwell have also this peculiar advantage, every cottager is entitled to depasture two cows, and no inhabitant of the parish occupying one house, and maintaining one family, has a right to depasture more, let his holding be ever so extensive; therefore, if common rights can advantage cottagers any where, those of the parish of Ashwell certainly will; but very few of these much favoured cottagers have wherewithal to purchase a cow, and if they had, they cannot get provender to maintain her in the winter; the consequence is, that only eight cows were kept by cottagers in Ashwell in the year 1794. These cottagers have also a right to lead (as they term it) their cows on the baulks and wastes interspersed in the common fields.

Lord Henryon's opinion...

25th Jan.

in Middleton Land Surveyor
row, Lambeth.

at all times, and while the crops are on the ground. The exercise of this right is the source of much injury to crops, cultivated with great care and expence, and which have afforded bread to the numerous poor of the parish employed in weeding them. But this right, though productive of little good, and much mischief, must not be wantonly annihilated; for the cottager of Ashwell, who has neither the means to purchase a cow, nor provender to feed her in the winter, values himself on his common right, he looks with an eye of jealousy on a proprietor or occupier, if he incloses a very small part of the known land, or ploughs but a single furrow from a baulk or waste. If the cottager cannot purchase now, he cherishes the hope that he may be able to purchase hereafter; this hope may never be realized, but it is his present, and perhaps his future substitute for a cow. A majority in number and value of the land owners in Ashwell, might on application to parliament obtain an act to inclose, and to allot a portion of land to the cottagers adequate to the value of all their common rights, but not adequate to what they now are in their idea, could they exercise them; they would therefore, no doubt, grumble at the exchange, though for the better to all parties. The cottagers of Ashwell, though numerous, are by far too feeble to resist the force of an act of parliament; but the cottagers (the poor of the kingdom), are the many; therefore a general scheme of inclosure must be managed with more dexterity to prevent mischief.

The increase and employment of the hardy peasantry of the kingdom, are objects of first rate import, and therefore I humbly conceive, that a public act warranting the inclosure of commons or wastes, in a way less expensive than that hitherto adopted, requiring, as a preliminary, the consent of three-fourths of the cottagers in the parish or place to be inclosed, and guarding with the energy of patriotism, the interests of the sons and daughters of the soil, would be attended with the happiest effects; as I am satisfied that this consent of three-fourths of the many may easily be obtained, provided they are fairly and honestly dealt with.

As the county of Hertford is by far too narrow and unpro-

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ductive a field on which to investigate the actual state, and determine the claims of cottagers at large, I must beg leave to refer to what experience has taught me of the actual state of cottagers, as far as my experience has reached. Where wastes and commons are most extensive, there I have perceived the cottagers are the most wretched and worthless: accustomed to rely on a precarious and vagabond subsistence, from land in a state of nature, when that fails they recur to pilfering, and thereby become a nuisance to their honest and industrious neighbours; and if the father of a family of this sort is withdrawn from society for his crimes, his children become burthensome to the parish. It may truly be said, that for cottagers of this description the game is preserved, and by them destroyed; they are mostly beneath the law, and out of the reach of detection, and while they can earn four or five shillings, and sometimes more, in a night by poaching, they will not be satisfied with 10d. or 1s. per day for honest labour. A reform here is absolutely necessary, whether by consent or otherwise, and an inclosure of the commons and wastes will afford these cottagers an honest livelihood, if they think proper to embrace it; if not, brighter prospects will thereby accrue to the rising generation, who may not be so hardened as their progenitors. Landed properties in manufacturing towns and parishes are heavily loaded with poor rates, when the manufacturers are not employed, and parishes in which boroughs are situated are almost without exception, loaded with poor of the very worst description; these I leave entirely to the wisdom of the legislature, as any hints of my suggestion may be construed into a parallel between the borough cottagers and their present reformers. I am satisfied that the honest industrious cottagers every where, to whom commons are of very little advantage, will acquiesce in inclosures, provided their consent is asked, and an equivalent held out to them for their cottage rights.

Though Hertfordshire contains less waste than most counties in the kingdom, there are notwithstanding several small commons and wastes, from 20 to 50 acres and upwards therein, which though no object of inter-commonage to the parishes where they

lie, are notwithstanding, when taken collectively, an object of some moment to the public ; and as there are similar small commons and wastes in every county in the kingdom, the object is by that circumstance greatly enlarged ; a partition of these commons would not compensate to the persons having common right therein for the expence and trouble in making that partition valid, though none of them will suffer another to usurp his rights, therefore these commons and wastes remain uninclosed.

As it is a matter of indifference to this Honourable Board, and to the public, whether such commons and wastes are cultivated by A or B, provided they are cultivated, the interests of all parties may be concentrated by a public act warranting the inclosure thereof, with the approbation of three-fourths of the land owners, including the lord of the manor, rector, or vicar, or both, and three-fourths of the cottagers ; and empowering the lord of the manor, the rector, or vicar, and the overseer of the poor for the time being, to let the commons for 21 years to the highest bidders, or for the best rent that can be got for the same, giving a preference to industrious cottagers with families ; the rents to be applied in the first place towards the discharge of the expences incurred by the inclosure, and for ever afterwards one twentieth part thereof to the lord of the manor, one tenth to the officiating clergyman, provided his stipend is less than £100. per annum ; and the residue in discharge of the poor rates, or land tax, in case of a surplus : future leases to be granted by the same parties or their successors, and the surplus of rent to be received and accounted for by the overseer for the time being. The inhabitants of the parish of *Dale* may not be disposed to inclose now, if aided by such act, but they may afterwards.

Appeals may be made to the justices at the quarter-sessions, who should, in these small matters, be the *dernier resort* ; and the consent of the parties, inclosure, &c. be certified by them, and enrolled in chancery, in *perpetuum rei testimonium*.

In common fields where the separate properties are ascertained by buttals and boundals, and are called known land, in contradistinction to commons and wastes, which are called unknown

land, the now straggling state of landed property so circumstanced, though of considerable annual value, renders an equitable exchange of lands necessary, to promote the cultivation and improvement thereof; in these cases, actual surveys and values must be made, to ascertain with precision the values of the separate properties, and under the direction of commissioners appointed by the general consent of the land owners. A whole parish is converted into a money value, future and more convenient roads are marked out, an adequate portion of land is allotted to the church, in lieu of tithes; the lord of the manor has generally one twentieth of the common or unknown land, quantity and quality considered, and each separate proprietor has a new estate marked out for him, lying together, and as convenient as possible to his homestead, and duly proportioned to the value of his former estate.

Professional men have hitherto considered the aid of parliament necessary, to confirm the inclosure of property of this sort and magnitude, either before or after the inclosure thereof; as in most cases there are parties interested who are not competent to give their consent. The chancellor may be empowered to consent for such parties upon petition, and direct issues in cases of disputes or differences among the proprietors. But the interests of cottagers must be attended to, and the consent of three-fourths of persons of this description had, before any public act of inclosure can, with safety to the peace, and I may truly say, the interest of the public, be carried into effect. I repeat, that I am satisfied that this consent of three-fourths of the *many*, may easily be obtained, provided they are fairly and honestly dealt with, and have separate allotments adequate to the value of their common rights.

It is for the benefit of the state that the cottager's allotment should enure to his children, the future guides of the helm and the plough; to restrain him from alienating would be unconstitutional; but the cottage and its appurtenances may be exempted from all rates and taxes while they remain in the family. The hope of rewards is better calculated to render mankind virtuous, than the fear of punishment.

Crown Lands,—Though the landed property of the crown is not specifically included in the queries of the Board, it may notwithstanding be included under this head, as it forms a considerable part of the waste of the kingdom. The New Forest in Hampshire, is alone of great extent, nearly the whole properly tillage land, and bears all over, the marks of former occupancy and the plough; very little of the timber thereon either is or ever will be fit for the purposes of ship building, and it may with justice be considered a common only to the surrounding inhabitants and parishes to the distance of 15 miles and upwards therefrom, who have acquired a right thereon in this way. Cottages have been built from time to time in different parts of the forest, by howards or herdsmen, who look after and tend such cattle as are sent to them, no matter from whom or whence, at so much a head; so that the New Forest is become a common to a considerable part of the counties of Hants and Dorset. Were the crown disposed to inclose a part of this forest, to protect the young timber from the bret of cattle, there is in fact no succession to protect, it would therefore not be an object, and would besides raise a nest of hornets, disturb the peace of that part of the kingdom, and become a watch-word to those who are prone to mischief every where. A public sale of this forest in lots would, I apprehend, be relished much better, and if judiciously managed, would, I am satisfied, sell for much more than it is really worth, and better than perhaps any other tract of similar extent and quality upon the face of the earth. An equivalent in money may be given for the now value of the commonage, brushwood, and turbary, to those who are fairly entitled to it, instead of allotments to parishes, in lieu of common rights, and which would remain uncultivated, and like several of the allotments of Enfield Chase, of little use to the public; this may serve as a precedent for all the crown forests and chases in the kingdom, and equivalents in money given to those who have a permanent interest therein.

The grand junction canal passes within about a mile of Whitebury forest in Northamptonshire, and I am of opinion a side

cut may be carried into the middle of the forest ; the timber here is like the timber on all forests, not much to be relied on : there is abundance of compass timber, and several stern posts and stem pieces, if sound ; but I fear very little plank timber, which becomes scarce every where. Whittlebury forest and its purlieus contain a large tract of fine and valuable land, now lost to the public. The gravelly soil of Epping forest will produce valuable crops, when aided by the Hertfordshire top dressings and sheep folding.

The honors or seigniories of the crown produce nothing, or worse than nothing : of the seven wapentakes in the West Riding of the county of York, five are within the view of frankpledge of the duchy of Lancaster ; several of the manors have been granted away since the inquest of Elizabeth, and individuals have been encouraged to usurp the manerial rights of most of the rest, by the supineness or connivance of the officers of the crown ; pretended lords of manors have from time to time inclosed large commons and wastes, to the great prejudice of those who had common rights therein ; and the *nullum tempus* law was fabricated to secure a separate right to the usurpers, but liberties and franchises were excepted.

The honors of Clare and Mandeville extend into Hertfordshire, Essex, Suffolk, Middlesex, and Surry, and still contain a great number of manors and separate parcels of land, for which ingress, and alienation fines, and quit-rents, are payable ; these were also long neglected, and payments refused to the applications of the stewards and lessees of the crown ; in consequence of such refusals informations have of late years been filed and proceeded upon in the duchy court of Lancaster, and payments thereby enforced. I understand the lessee is now paid *com. ann.* between four and five hundred pounds, his rent to the crown about £10. the fees and perquisites of the steward are also considerable ; when he receives a fine or quit-rent of one shilling, he charges three shillings for a receipt. The leases of the honors of Pontefract, Clare, and Mandeville, are nearly expired ; the stewards hold their places by patent under the duchy seal.

These and other not mentioned parts of the now *unprofitable* lands of the crown, if brought to market with judgment, and disposed of by public sale (the most unexceptional way), under the conduct of those who are the most celebrated in the line of their profession, will produce a *very large sum*, which may be funded, and create a *substantial* revenue to support the dignity of the sovereign, and the establishments of a numerous and illustrious family: the advantage to the public will be still greater. I am aware that I shall not be thanked for this information, so far, by those whose interests clash with that of the public; and therefore shall be silent as to the improved part of the estate of the crown, in which the public and I have no concern.

Draining of Land.—This is a curious and interesting subject, and should be fully explained, and the materials used in different countries to keep the drains open, mentioned. I have no doubt but the gentlemen who have reported the state of agriculture in counties where draining is more in use than in Hertfordshire, where natural drainage does so much, have fully explained the methods practised there; I am aware of the benefits resulting from this practice, and therefore shall contribute my mite.

The theory of land draining is combined with the different strata of which the earth is composed, and the rain water in contact with these strata. A uniform deep chalk stratum covered with a thin staple or strata, which are pervious to rain water, imbibes and filtrates the water, which is again disembogued in distant valleys at the extremities of the chalk stratum, which often extends for many miles—hence the great scarcity of that necessary element in chalky countries. In countries where the universal substratum is a porous limestone rock, as the Mendip in Somersetshire, at and in the neighbourhood of Piercefield, in Monmouthshire, and many other places, whole mill streams and rivulets are swallowed up, unite in the bowels of the earth, and issue again to the day from the sides and bottoms of hills in considerable rivers. In similar situations land and other springs, which injure the crops, are got rid of by a very easy process, which will be mentioned afterwards. I must here remark,

that the best and sweetest herbage is generally produced by a thin staple on a calcareous substratum, though in no great abundance ; were the staple impervious, or exposed to land springs, the case would be otherwise. The thin stapled downs on chalk skirting this county next Cambridgeshire, are fine healthy sheep feed. The beautiful undulating carpet on a limestone rock, at different depths of staple in Piercefield park, is not the least of the numberless beauties of that enchanting place. I was guided to a discovery of the Hopton wafers limestone by the herbage on the thin staple above it.

In clay soils, rain water can escape by the curvature of the surface only ; hence the necessity of throwing the staple into high ridges, or hollow draining it, particularly if the surface is level, to facilitate the escape of the superabundant moisture. The prints of the feet of cattle in this soil will hold water like a dish ; it cannot be properly ploughed or wrought in a wet season, and therefore called unseasonable land, and most profitable in meadow or pasture in general, though the grass may be coarse ; but when in that state is must not be too much trodden by cattle in wet weather, particularly in winter, to break the carpet. Where the soil is composed of different thin strata lying above one another, and the upper stratum or staple is pervious, with an impervious stratum under it, the rain water is imbibed by the upper stratum, and again discharged at the lower sides or ends of it, these discharges are commonly called land springs. In brows or declivities and sides of hills, the ends of the different strata appear one above the other, and here the land springs issue from the pervious strata which have been saturated by pervious communications from a great extent of level surface above, and drown the lands lying under the places from which they issue ; in such cases drainage is most materially wanted, and in the latter case a ditch or drain is cut along the brow of the declivity in the sound land, a little above the land springs, giving the drain a gentle descent till that direction ceases to be necessary. The drain is cut through the pervious stratum, or strata of sand and gravel, and about six inches into the impervious stratum below ; the width and slope of

the drain are regulated by the depth and concomitant circumstances; the ends of the drains are turned to the quickest descent. When the drains are thus dug, they are kept open, and from the tread of cattle, till the effects produced thereby can be clearly distinguished. If the land is completely drained, they are filled up; stones, black thorn, elm, or other brushwood, are put in first, then straw or heath, or the turf cut from the top of the drain, if in pasture, with the grassy side downwards, before the earth is thrown in. In some counties, particularly Leicestershire, where stones and brushwood cannot be procured, surfing bricks are used, and which, in my opinion, should always be used where stones cannot be procured, and brick earth and fuel are plenty. a surfing brick is about a foot long, five inches wide, two and a half inches thick, and excavated lengthways on one side, so that two bricks put together form a cylindrical tube, about three inches diameter, these will make a tube of any length to convey water underground, and last for ever. The turf, if any, or a little straw or heath should be laid along the top of the surfing bricks before the drain is filled up; the water passes through the joints between the surfing bricks into and along the tube formed thereby. While the drain is open, separate drains are made thereinto from any remaining springy places lying above it; and those lying below must be got rid of by separate drains also.

Were more attention paid to the forming and laying out of inclosures, and scouring ditches from time to time when wanted, less drainage would be necessary, particularly in impervious clay lands, the staple of which should be laid as hollow, and as little subject to the drip of lands lying above them as possible. To facilitate the escape or passage of the superabundant moisture which cannot escape through the soil of level lands of this description, they are hollow drained. Suppose a field of this sort of land, about 1400 yards long and 600 yards wide, containing near 16 acres, and inclined breadthways about 10 degrees to the plane of the horizon, about five principal drains are made from the top to the bottom of the field breadthways, parallel to and equidistant from the end ditches, and from each other; these drains are made

about two feet six inches deep, about fourteen inches wide at top, and four inches wide at bottom : cross drains are then made all over the field, from five to seven yards asunder, so that the field is a net work of drains ; the cross drains are about two feet deep, and of the above dimensions in other respects. In Hertfordshire the drains are filled, by laying in first, black or white thorn, or elm, or other brushwood, then the stems thereof, or pieces of top wood, three or four feet long, and nearly as thick as a man's arm, one end of which is higher, so as nearly to be touched by the plough, the earth is then thrown in and trod down ; by this means every plough furrow is a little drain communicating with the cross drains at different parts, and the superabundant moisture and land springs, if any, thereby escape into the principal drains.

The Rev. Mr. John Keate was inducted to the rectory of Hatfield about the year 1787, the glebe contains about 100 acres, and had been before that time let to tenants who had beggared it, and in order to improve it he took it into his own hands. A field containing about 17 acres adjoining the parsonage was improved in the following manner: the descent is breadthways, and nearly level towards the lower side; the soyle a strong clay loam, admitting a furrow about 13 inches deep, on strong clay mixed with flints, in general large, and in some places lying in different strata : three pits were sunk in this field to the depth of 20 feet and upwards to find chalk, without success ; in one of the pits a stratum of white loose sand, about four feet below the surface was sunk into about 10 feet, when the pit fell in and was then abandoned : the field was then drained by four principal drains, and cross drains from 5 to 7 yards asunder, of the dimensions and filled up as above mentioned. I saw this field in August, 1794. On the side of the field next the house and farm-yard, about two acres of lucern was sown broad cast about three years before, and after the drainage and following preparation ; about five acres on the house side of the field was chalked from a pit in the field above, about 50 loads of good chalk to the acre ; the dressing was a mixture or mixen of earth and dung ; the soil (hedge green) to the distance of about 16 feet from the stem of the hedge was

dug up about 16 inches deep, and to every layer of this earth about 6 inches thick, a layer of dung, principally made by bullocks fed with oil-cakes, was put: three layers of earth and three of dung, laid alternately on each other, composed the mixen or dunghill; this was turned once only, and laid on the land the latter end of April, ploughed in directly, and sown with buck wheat and lucern broad cast. The buck wheat was reaped about a fortnight before the Michaelmas following; and on the first of May next year the cutting the lucern was begun; it was cut three times that year, and given green from time to time to the working horses, and they thrive well upon this food; it was also given to the milch cows from the cribs in the farm-yard at night, and they gave in consequence abundance of milk. The cutting the lucern in 1794 began the 24th of April; the whole had been cut twice, and a small part the third time, when I saw it, the first crop was a yard long all over, the second crop as good, but the dry weather had hurt the third crop, then cutting, and it was not so even as the first and second crop. In November, 1793, the lucern had a coat or dressing of burnt or calcined bones laid on it, brought from London, at 5*d.* per bushel, carriage included, and about 80 bushels, £1. 13*s.* 4*d.* per acre. A man and a horse and cart will spread or sow an acre in about four hours.

The adjoining three of the five acres that were chalked were also manured with the dung of cattle, fed principally with oil-cakes, 10 good loads to the acre, then sown with buck wheat; and this year the crop of barley on the buck wheat stubble was, without any further dressing, truly capital, and which in a less dry season would have run to straw, or been laid, or both.

Five acres adjoining were also cropped with barley, on a summer fallow, and dressed with dung and mould, 20 loads to the acre. Mr. Keate's bailiff computed 6 quarters on the chalk, and 7 ditto on the tilth; but I considered them more on an equality (about a 14th return).

Three acres, then cropped with turnips on a summer fallow, half of which was dressed in the spring with boiled bones, which cost at Hertford 12*s.* per chaldron, 4*d.* per bushel, three chaldrons

to the acre, which is there considered to last or give crops for 8 or 9 years, with the assistance of a top dressing of ashes to the barley and clover crops. But I am of opinion the good effects of bones as a dressing for land, will endure for some centuries ; and I ground this opinion on the effects produced by bones heaped together by the folly or madness of mankind, and which are the only remaining evidence of that malady of their former owners. The other half was dressed with dung and mould (*mixen*), the tilth sown with turnips, inclined to what is called hazle mould, but stronger, and then wrought like an ash heap.

The remaining four acres were cropped with buck wheat sown about the middle of May, about an acre and half fallow on wheat stubble, and the whole dressed with *mixen*, about 20 loads to the acre ; two bushels sown on an acre, return expected 40 bushels per ditto, to be cut about 3 weeks before Michaelmas, and followed by a barley and clover crop. Buck wheat, the same value as barley, about 38s. per quarter, is ground and mixed half and half with barley meal for hog meat ; it is also given to poultry, and considered excellent food for both.

Having thus coupled the drainage and subsequent manurage of an impervious superstratum, and with pleasure dwelt upon the effects produced thereby, I cannot now return to my text before I have given a further report of this gentleman's improvements in general.

The nine acres, or How croft, to the south of the house, has a good fall or natural drainage, and nearly east aspect, the staple is of different thicknesses, on strong clay, with little or no mixture of flints, and shows under Mr. Keate's management what may be done with *lime rubbish*, chalk, and mixens. About three acres next the house is, in the language of the bailiff, of a mouldy sort, that is, about 16 inches staple, of a good, free, working soil. A thin staple on the clay, on the greatest part of the rest of the field. —The parsonage house, principally built with timber, and lath and plastered, was formerly very extensive : Mr. Keate pulled down a considerable part, and repaired the rest. About three acres of this adjoining field (the loamy sort) was dressed on the

tilth with the lime rubbish of the buildings so pulled down and repaired ; the quantity per acre not ascertained, and no manure or top dressing whatever besides. The first crop barley and seeds, produce about seven quarters of barley per acre ; two loads and a half of first crop, and one ditto of second crop of clover per ditto. This year (1794) the wheat crop about thirty two bushels and an half to the acre, though the straw was about five feet and a half long, and about a fourth part of the crop laid ; the stubble as thick as reeds. About six acres were chalked from a pit in the top or upper part of the field, about 60 loads to the acre, and also dressed with mould, only about 20 loads to the acre ; the chalk and mould laid on the tilth ; this produced about six quarters of barley, a load and a half of clover, the first, and a load the second crop, per acre, and this year about 29 bushels of wheat per acre.

Mr. Keate has also drained great part of his grass land, and dresses it with calcined bones, about 80 bushels per acre, which costs about £ 3. 17s. and also with drift sand or road dust. He cuts his clover and grass much earlier than others, before the underleaves have fallen from the stalk, and in the most succulent state of the plant. The hay requires more time and labour in the making, but is much better, and more nourishing for cattle. I viewed the dell from which he takes the soil to lay on his meadows ; it is a deep ravine or cavity surrounded by clay lands, for the most part rising therefrom. Whether this was anciently a chalk pit and excavated by art, is now uncertain, the surface is at least half an acre, and filled to a considerable and yet unexplored depth with very fine washed brick earth, brought there by the floods from the clay lands, and deposited from time to time as the flood water sunk through the chalk below, or evaporated. With the top soil he dresses his meadows, but the under soil is of much greater value to a brickmaker, and would be a treasure of some consequence if near London.

Mr. Casmajor farmed his own estate at High Canons, in the parish of Shinley, about 6 miles beyond Barnet, for 11 years and upwards ; it contained about 316 acres, mostly wet, unseasonable, clay land, and the whole a very indifferent subject to

work upon : he began very properly, and to use his own words, by tapping the land ; he drained it, and had, when I waited upon him by the directions of this Honourable Board, very properly converted great part of it to grass.—His then composition for tithes, was to his composition about 11 years before, nearly in the ratio of three to one.

To enumerate the various ways by which drainages have been effected, either by design or accident, would require more time than I can bestow on the subject, I shall therefore content myself with a few striking instances both ways, and which will tend to show that in making drainages on the great scale, in tracts of level land containing a thousand acres or upwards, and of lakes of great extent, but considerably above the level of the sea, methods, hitherto not practised, may be tried at no great expence, and with a prospect of success.

If a pit is sunk 20 or 30 feet deep, in the middle of a field, through the Hertfordshire red, flinty, and impervious clay, into the chalk below ; when the usual quantity of chalk is taken out, the pit shaft is filled up with the flints taken out of the chalk and clay, and the top drainage of this part of the field much shortened for ever afterwards, by making principal drains from the part of the field above the level of the top of the pit, terminate therein, and the superabundant moisture will escape through the flints in the pit shaft to the chalk below. And if a drain is carried into a limestone quarry, it is seldom necessary to carry it further.

A well is frequently sunk through clay, then gravel containing land springs, then a quicksand, containing land springs, and into a rock to a great depth, before a vein is cut : a considerable spring or little subterraneous rivulet then runs in at one side of the shaft, and out at the other : a cess-pool is made below the entry and exit of this abundant spring, to contain a sufficient depth of water to dip a bucket therein, the land springs run down from different parts of the shaft to the bottom, notwithstanding which the water never rises, at any time, above three or four feet higher than the usual level. This well may be from 50 to 100 feet deep, and if a small stream is conveyed into it from the surface,

the water will never rise to the top, but escape by the pervious strata which have been cut through at different depths in the well.

In dells or hollows of considerable extent, covered with an impervious stratum, and from which there is no natural drainage, such as the valley between Mold, the shire town of Flintshire, and the adjoining high land, a pit about four feet diameter, and fifteen feet deep, more or less as the case may require, is sunk through the impervious superstratum into a pervious stratum of gravel; and the rain water, and of some adjoining springs are carried from the surface thereby: the pit is railed round to prevent cattle falling into it. I must here remark, that though in this, as well, as in many other instances that may be given, the top water escaped through the pervious substratum, the effect might have been directly the contrary. I would therefore recommend the impervious superstratum, in all such cases, to be perforated by bore rods, and the hole made by them is easily stopped up. Near the turnpike road from Mold to Denbigh, and about a mile from the former place, the far-famed, wonder-working St. Winifred's well has totally disappeared ever since the great level to the Chlin a'Pandy lead mine has been drove, and which passes many fathoms under the spot from whence this spring issued, and left not a drop of this panacea for all the maladies incident to human nature. About a mile further, the Denbigh road passes through a morass, on the top of the mountains, surrounded by a ridge of hills, a small stream of water runs from this morass into a *swallow*, in the limestone rock, on the surrounding ridge, and points out to lead miners a hitherto unexplored road to fortune, without the expence of a steam engine or level to take the water from the mine. The water was raised by a steam engine about 60 yards from a colliery in Yorkshire, which had been wrought several years; the proprietors bored down to the depth of about 10 yards further, to ascertain the depth and thickness of a seam of coals, which was supposed to lie below those then wrought; the workmen employed, bored from the bottom of the pit next the engine pit, and when they had bored to the above depth, and taken out the rods, the water from the

works which usually ran across the bottom of this pit to the engine sump, run down the hole they had then made. As soon afterwards as the steam engine was set to work at the stated period (about one hour in twelve) the engine sump contained little or no water; it had escaped through this hole, and continued to run through the same for ever afterwards, and rendered the engine useless. This last instance of water at so great a depth from the surface finding a passage at a further depth of 10 yards, or less, and immediately below, is very singular and striking. The situation was much higher than the next adjoining valleys, and the level of the sea. Experiments of this sort seldom fall to the lot of man to make, therefore such instances are very rare and uncommon. But in large tracts of level land, where lakes or morasses have been formed, and which cannot be drained by cutting open drains, or driving levels through rocks, but at an expence for which the lands when drained would never compensate, all the above instances warrant experiments being tried with bore rods, which if not successful, may be tried at little expence.

Paring and Burning.—I saw but one instance of this practice in the whole district, and on light, sandy, thin stapled land, where Duckett's skim plough would have been much more usefully employed: I therefore leave it to my able coadjutors to immortalize themselves by reprobating the practice, where it is more prevalent; fearful as I am, that a further discussion of the subject would betray me into expressions incompatible with that measured language, which it is both my duty and inclination to adopt when I address this Honourable Board.

Woodlands.—Where the soil varies so much, where the greatest part is under the plough, and where dressings are found to suit the poorest soils, this county may be said to be well wooded. Independent of the woodlands contiguous to the seats of gentlemen, nearly the whole county is interspersed with small woods and copses, and these generally occupy the most barren and gravelly spots, which are well adapted to the quick growth of underwood. The woods are well fenced in, when cut, and preserved from the brett of cattle, and also drained, if necessary.

As the growth of hop poles is not attended to, the woods are cut in succession, about every ten years, and the straight sapplings of oak, ash, beech, willow, birch, poplar, hornbeam, or any other wood, either from the stub or seed, are preserved till the succeeding fall, and then a due succession of the oak, ash, and beech seedlings are preserved, the rest are cut down and split for sheep flakes. Great part of the underwood is hazle, and a conversion of the straight hazle rods into smart hoops for the West India trade, would be more to the advantage of the growers, than into charcoal and firewood ; but this conversion is not much understood or followed in Hertfordshire. A good plant of thriving underwood may be averaged at 20 shillings per acre per annum.

There is a considerable quantity of compass timber, fit for the navy and inferior shipping, but not much plank timber, in this county : the timber of the best quality will be found on the clay soils ; a large supply will be brought to the London market by the grand junction canal. I have seen naked oak timber lately sold, near Berkhamstead, and in the line of the canal, at £ 3. 10s. per load, which would be worth, at any of the King's or merchants yards, at least £ 5. 10s. per ditto. Few knees are now used in line of battle ships ; but knees are used in the construction of merchant ships, frigates, and sloops of war, and standards in that of all ships of superior force ; the Hertfordshire hedge row timber will supply these in abundance.

When a substitute is found and used for the Hertfordshire top dressings, the practice will be still incomplete without sheep folding, and this cannot be properly done without flakes or hurdles. In Wales little or no care is taken to preserve what little underwood grows there, from the detriment of cattle. In Scotland there is little or none to preserve. The now spirit of enterprize in the counties of Glamorgan and Monmouth promises a supply of bar iron for home consumption and exportation ; the ore is smelted with coal ; but good bar iron cannot be made without charcoal ; and the now bloomeries consume more charcoal than the neighbourhood grows ; the best and speediest way of planting woods is with the plough ; the worst soils, if tolerably dry, will

grow underwood for charcoal and hurdles, and much better underwood than timber. A piece of heath or hungry clay land is inclosed : though I am no advocate for paring and burning, a singe may be necessary here ; the heath is burnt, the land on which it grows is then ploughed, and this tilth when dry in the summer, may be burnt as it lies on the ground, and not heaped together : a crop of oats is sown in the spring on a second shallow tilth, and acorns, ashkeys, beechmast, or the seeds of any other timber, sown with the oats, and well harrowed in. It is the custom with some wood planters in this way, to pull the oats when ripe ; I recommend cutting them with sickles, and as high as possible, and carrying them off the ground in sacks, and no carts or cattle permitted to come on the ground : the long stubble will shelter the young plants in the winter ; when the crop is sown, fur-seed may be sown to the width of about 10 feet round the outside of the field, this will, in two or three years, make an additional fence : great care must be taken to keep out all sorts of cattle for the first eight or ten years, and for the first two years, particularly in the winter, the ground must be hunted with dogs to drive out hares and rabbits, for they will eat up the young oaks to the roots. Spanish chesnut trees will thrive in the poorest soils, and the timber is valuable : Scotch firs, or other trees, may be planted from nurseries, or any of the trees in the field, where too thick, may be transplanted into the vacant parts. The above is the best way of planting oaks, as they should never be transplanted ; the sapplings draw one another up straight ; they may be thinned from time to time, and the stubs of those that are cut produce the future underwood.

Provisions.—In all the counties round London provisions are dearer than in the metropolis, and much of the provisions with which the poor are fed, are brought from thence, independent of groceries. Yorkshire bacon, generally of the worst sort, is retailed to the poor from little chandlers shops, at an advanced price ; bread is retailed to them in the same way.

Farm Houses and Offices.—The Hertfordshire farm houses and offices differ much ; many of the houses are old buildings, and

the *quondam* residences of the owners of the soil, constructed without taste or convenience, and situated at one side or end of the land held therewith; the offices, and particularly the barns, are in general good, and some of them capital. It is much easier to describe and point out what farm houses and offices should be, than what they are.

This healthy and beautiful hill and dale county, studded nearly all over with little woods and copses, the requisites of chaste landscape, is highly susceptible of the embellishments given by simply elegant farm houses and cottages, such as the annexed sketch represents; and which if situated on the brow of a hill, backed by a copse, and rising gently to a south aspect for near half a mile from a high road, and surrounded by about 400 acres of good arable land, and water at a small depth, will have every requisite advantage.

In the distribution of the house, the size and situation of the kitchen is first considered, it is 25 feet by 16 feet, and 13 feet high, and well lighted, no outer doors opening into it; and it is central and convenient to the parlours, pantry, dairy, scullery, brew and bakehouse; the cellars under the house, and the sinews of industry in hay time and harvest therein contained; here the farmer, his family, and servants, generally eat their meals, and sit comfortably and contented in the winter evenings, when the labours of the day are over. The windows look on the farm-yard, and what is transacting there: the parlours are ten feet high, and of the dimensions marked in the plan; and four good bedchambers and two garrets above, in the centre part of the house; the right wing is the brew and bakehouse, the fire-places of the brewing copper, the copper in the scullery, and mouth of the oven, are in the brewhouse. The separate flues from the kitchen, parlours, and bedchambers, and the flues of the coppers united under the wide chimney-cap in the brewhouse, are turned up in the party wall into one stack, seen in the elevation of the back front. The left wing is a granary, the floor of which lies three feet clear of the ground, and a bedchamber above it for men servants. The joists of the bedchamber floors above the kitchen.

and pantry extend in part end ways through the walls, and over the scullery and dairy, to support leaded cisterns for the reception of rain and spring water, as shown in the back elevation ; water pumped up into the cistern above the scullery will, if conveyed from thence in lead pipes, supply the kitchen, scullery, and brew-house ; the ale and beer may be conveyed in like manner from the brewhouse into the vessels in the adjoining cellar. The cistern above the dairy may be filled with rain water, conducted from part of the house in fillet gutters. The extreme buildings with pediments, are hay houses, or places to lodge hay, potatoes, or any other provender for cattle, to be carried from thence either to the racks in the stables, or stalls in the ox and cow-houses, to prevent waste. These hay houses, or rooms, are about seven feet high, with pigeon houses above them ; the floors of the pigeon houses terraced, and entered from without by a moveable step ladder, and doors on the construction of pitching doors. These buildings should be constructed with brick or stone, and tiled or slated. The offices between the house and the hay or pigeon houses are sheds, and should be pan-tiled. All the other offices may be built with timber, on brick or stone underpin, and weather-boarded and thatched.

The proper construction of barns for the preservation of corn from vermin, has of late become a question of some importance, and induced me to show, in part, the construction of insulated barns, or barns built on pillars or piers ; and in my opinion, better adapted to a farm-yard, than any on that principle I have yet seen. The annexed barns are under one continued roof, and the roof descends, and is continued over the porches, at the ends of the threshing-floors, so that there are no valley gutters, and the barns are thatched to keep out the drifts of snow. The bays are filled by or through pitching doors at the ends, and on each side of the covered passage between them, which is 10 feet wide, and receives a loaded waggon, for the double purpose of unloading, and sheltering it from rain when loaded. Corn may be also pitched into the barn doors, to facilitate the filling and making up the mows on each side of the threshing-floors. The scantlings

which support the principal rafters, stand upon the ends of the cross girders, and should be secured by knees bolted to them and to the tie beams, to prevent the barns from racking. The floors are an additional expence, and require strength: the scantlings of the girders should be a foot square, and of the joists 8 inches by 4 inches at least, and the floor, inch and a half or two inch deal, the threshing-floors are oak plank:

Nature of Leases.—I freely confess that this is a question which I am not prepared to answer, though I am, and long have been, in the almost daily habits of seeing and perusing leases made of lands, in every part of England. I trust I have in the sequel thrown some lights on this subject, and to which I beg leave to refer.

Commerce and Manufactures.—The commerce of Hertfordshire is in the produce of the soil, and the only manufacture, properly so called, therein, is perfectly analogous thereto, and confined to the women and children of Dunstable, Luton, and that neighbourhood. It is the straw manufactory. Great quantities of malt is made about Ware, Hertford, and that neighbourhood, principally for the London consumption. There is a cotton mill near St. Albans, for making cotton candlewicks, and one on a more extended scale near Rickmansworth: it follows of course that the effects on its agriculture must be good.

Societies instituted for the Improvement of Agriculture.—Many of the Hertfordshire farmers do better, they individually set the example. If any society or societies for the improvement of agriculture has or have been instituted in this county, I have not been so fortunate as to meet with, or hear of them.

Obstacles to Improvement.—The penetration of this Honourable Board has, no doubt, anticipated that opinion, which my duty to them and to the public, now forces me to give in plain and pointed language. I trust I have no prejudices, and though my powers are weak, my wishes are always to inform, never to offend. To point out the obstacles to improvements, and the manner in which they can best be removed, is the last and most important part of my task. The mischief done to the

public, by the now subsisting obstacles, is of such magnitude, that I question whether the extra benefit resulting from an inclosure of all the commons and wastes in the kingdom, would compensate for the same; therefore the fable must be highly coloured, the application is no business of mine.

Where the land is tithe-free, and occupied by the owner, his interest (if he knows it) and that of the public exactly tally; the land will be brought to and continued in a proper state of manurage: it is possible, in such cases, that the public may have the best of the bargain; and land thus circumstanced, though of the very worst quality, be mended for ever, and at an expence, for which that mendment will never compensate to the improver, who, actuated by a hope of future gain, which may never be realized, or the honest pride of decorating his rocks and sands with the cheerful face of smiling plenty, will build his tower before he calculates the expence. But if the rector is to share crops, he will balance, a few plain figures will settle the profit to the rector, and the loss to himself; the lands will remain uncultivated, and the public never be benefited by the crops they would otherwise yield. In every case where tithes in kind are payable and insisted upon, improvements slacken. This general rule will be found without exception, and a great majority of the Hertfordshire rectors are so sensible of this important truth, that they are satisfied with moderate compositions; the measure thereof following the improvements with a slow and steady pace, while a living profit to the improver is constantly kept in view. Were it not for this prudent moderation, there would be an end to boncing, chalking, top dressing, and the other very expensive improvements of the county.

A numerous tenantry has long held by lease or otherwise, under a respectable family, on whose honour they could rely. Where the evils complained of in bargains between landlord and tenant, and where a course of husbandry often prescribed, which in many unforeseen cases cannot be pursued, without injury to all the parties concerned, did not exist, the rector always copied the example of his patron, and the lands were kept in a proper state

of manurage. The property so held and circumstanced, like the fall of empires, falls into the hands of a new landlord by purchase. He is too wise to be guided by the experience of others, and is absurd enough to give out that he means to grant no fresh leases: he is accompanied with a rector, who insists on extravagant compositions, or tithes in kind. The tenants at will immediately cross crop, and continue that practice till they are turned out; and they whose leases are nearly expiring, farm accordingly, or submit to unreasonable restrictions, and an advance of rent, to obtain a few years longer term: but as these restrictions, and all human laws have the same source, they have also the same fate; if mankind were perfectly virtuous, neither would be necessary, or wanted. The tenant avails himself of this addition to his lease, to wear out what mendment he formerly put into the land, and having accomplished this object, quits the farm at the end of his lease.

Having thus given, as I hope, a due preference to landlords and rectors of a certain description, I shall endeavour to match them with tenants. A farm is to be let to a tenant at will, at a certain annual rent; a farmer who really has sufficient property, no matter how he acquired it, views the farm, and perceives that something is still left to be taken out of the lands therein; he considers that he is to be tenant at will, therefore under no covenants or restrictions as to his cropping, and that he can leave the farm at any time, giving six months notice prior to the quarter-day on which he may enter; therefore agrees for the farm. He does not condescend to bestow a thought on the rector; he may take his tithes in kind, if he thinks proper, as the dung to be made from the straw thereof would be no object to a farmer of this sort, but he will give the rector all the trouble and hinderance in his power in the collection of the tithes, and cheat him if possible. Should the rector happen to be so simple as to bring an action on the statute against this bird of passage, for the value of tithes *literally substracted*, he will take care to make the tithes pay the expences incurred in foiling the rector as long as he can. In two or three years, after he has commenced tenant, he will apply to his land-

lord, who possibly by this time may have smelt a rat, and tells him, his farm is too dear, and he can hold it no longer without a lease, and a diminution of rent ; if they do not agree, he will apply the plough to the meadows and old pastures, if any, in the farm, and make sure of one good crop of oats, before he gives his landlord notice that he means to quit it. If the landlord, to save his meadows and pastures should agree to his terms, he must give him also a good marketable lease, and which he assigns as soon as he can, provided he gets a premium to his liking ; for farmers of this sort never farm, their practice is the very reverse : covenants are made to bind them, for the same reason that halters are made to hang rogues, but with much less benefit to society.

The honest and industrious farmer sees and laments the necessity of covenants between landlord and tenant, and would cheerfully comply with them, provided they did not frequently, in conjunction with seasons and circumstances, which human prudence cannot foresee, militate against his own, and the public interest.

A tithe-free arable farm, of unseasonable, or poor, light soil, or any soil, if out of condition, must be improved by money, and upheld by experience and industry, and if the annual rent or value is £ 100. the capital of the occupier should be £ 600. at least, in addition to a competent knowledge of his profession, and a lease to protect his improvements : the sooner the farm is brought into a proper state of culture, the better it is for the occupier and the public. It is most likely, admitting no accidents intervene, that all his ready money may be expended before the farm makes a suitable return, in that case a little indulgence from a landlord, so amply secured, may be necessary, and should never be refused ; the tenant will not wish to deviate from any judicious course of husbandry that has been prescribed to him, except when that course is deranged by the immediate interposition of providence. In such cases a different crop to that which has been sown in rotation, and has missed, should intervene, and the choice of the intervening crop left to himself. This choice may not meet the approbation of all parties, but it will shorten the exceptions thus rendered necessary to the covenants in a lease, and the land will

not be suffered to run to weeds, the worst of all possible crops, while the landlord and tenant are settling punctilios.

The tenant will continue a judicious and profitable course of husbandry, as long as the returns are insured to himself; but towards the last years of his term he will relax, if an adequate reward is not held out to insure his perseverance, and if that reward is nearly equal to any advantage he could reap by pursuing a less praise-worthy conduct, the injury to the public would be avoided, the succeeding tenant would cheerfully disburse that reward, increase the rent of the farm, if really worth an increase, and take the stock, &c. as between incoming and outgoing tenants, at a fair value; and at the end of his term would again relinquish on the same conditions.

All lawful compacts between man and man may be made certain, and to last for the time agreed upon, provided the contracting parties are competent. On this principle a farmer bestows his property and time in the cultivation of the estate of his landlord, who, for certain considerations, has, by a valid agreement, delegated all his powers to his tenant, excepting those expressly mentioned and excepted in the agreement. Thus far the bargain is sure, and the tenant runs all risks of loss of crops, stock, &c.: but if the land is not tithe-free, or subject to a modus only, a third person has an interest in the produce thereof, and if that third person is an ecclesiastical rector, he is not competent to make a certain agreement for his interest, were he so disposed. The tenant has the additional risk of the rector's avarice to encounter, and improves accordingly. When an unreasonable composition, or tithes in kind are taken, the tenant converts to pasture the lands which produced them, if he finds it his interest so to do, and the best system that can be devised, for the benefit of the public, thereby receives a mortal stab; for clover, hay, potatoes, turnips, cinquefoil, tares, the whole class of pulse, and intervening meliorating crops, whether for the purpose of feeding the tenant's cattle, or otherwise, are subject to tithes in kind, when severed from the soil on which they grow.

If the rector, or his tithe-renter, or gatherer, is of a litigious

and troublesome disposition, which the tithe laws, as they now stand, put it too much in their power to indulge, the evil of tithes in kind is increased to an alarming magnitude. In rainy and uncertain harvest weather, when prudence dictates the housing or stacking the crops immediately from the scythe or sickle, to avoid the consequences of the season, they must be shocked or cocked before the farmer can give the rector, or his petty tyrant of the parish, notice to set out the tithe ; he must wait a reasonable time for his arrival on the spot, before he will venture to decimate *ex parte* ; in the mean time a sudden and heavy rain outstrips the slow-paced tithing-man, and both crop and tithe are much injured or totally ruined thereby. If the tithing-man does not arrive in the usual time allotted to him, the farmer leaves the tenth shock or cock, and carries the rest of the crop at the risk of a lawsuit. How frequently in such seasons do the tithes, rotting on the ground, meet the eye of the traveller in every part of England.

There are some soils so very barren (Bagshot Heath for instance) that it is a matter of great doubt whether a cultor thereof could live by the produce of his labour, if he had neither rent, tithes, nor taxes to pay out of it ; it is notwithstanding for the benefit of the public that such soils should be cultivated, for there are seasons which render the crops thereon valuable to the public, when crops on better lands fail : the Hertfordshire rectors are in general so well-satisfied of the truth of this maxim, that they are contented with reasonable compositions, in lieu of tithes in kind ; but there are exceptions to this general rule, and where these exceptions occur, much injury is sustained by the public, as the growers are thereby restrained from using the very expensive annual *foreign* manures, the great source of the singular fertility of this county, and, as I conceive, of the superior quality of the grain it produces : for I am of opinion, the thinnest and lightest staple, particularly on chalk, produces the best and heaviest grain when properly forced with manure—hence the species of wheat called the Hertfordshire whites. The Hertfordshire farmers set the example of spring or top dressings, which are brought from

distant parts, principally from London, and therefore expensive: they are peculiarly applicable to light lands, and their effects end with the crops on which they are sown. This accounts for the moderation of the Hertfordshire rectors in general, and these dressings would no doubt produce good crops on all light, sandy, or gravelly thin lands, and soils barren to the generality of seasons, but if a tenth thereof is taken from the grower, he will soon be ruined. In remarkably wet seasons the public derives bread from such lands, therefore if obstructions are thrown in the way of their improvement, it is incumbent on the legislature to remove them. The drill husbandry, as practised by Duckett, is peculiarly calculated for the lightest soils; but scarce an operation in nature within the province of agriculture, escapes that wonderful self-taught farmer—I have therefore stepped out of my district to Esher, and given him and his light sandy soils a chapter to themselves.

The hamlet of Woodham in the parish of Chertsey, in Surry, is towards the upper part thereof barren to a proverb, it partakes of the soil of Bagshot Heath, and of that light, sandy, and gravelly tract which runs through Hampshire into Dorsetshire, and with some intervals of better land, across the kingdom: but in rainy seasons, when the heavy crops are levelled on better lands before harvest by a deluge, and in the elegant language of Ovid,—*strata jacent vota coloni*; the crops in the hamlet of Woodham, though short, may possibly be among the most valuable in the kingdom, and the growers *there* value themselves accordingly. In such seasons if a Woodham farmer, when at market, or from home, is questioned as to his residence, his answer is bold, and coupled with a question:—*Woodham; where think you?* but in general, *Woodham; God help me!* is his very humble answer, and indicative of his crops and his case. A considerable part of that extensive tract of common or waste land in the parish of Chertsey, Cobham, &c. containing many thousand acres, would produce good crops in a dropping year; and nearly central to these commons is a considerable tract of excellent deep peat earth, particularly in the hamlet of Woodham, and lands of the late Sir Thomas Sewell. The commons and wastes in the parish of

Cobham are now inclosing, and no doubt much may be done here with Hertfordshire top dressings and peat ashes ; but the rector must not cut too deep into the produce, otherwise the improvements will be very feeble.

It is a most equitable rule, that what concerns all should be approved of by all ; the rule of tithing is approved of by nobody ; and the respectable body of the clergy, particularly those who reside on their livings, are most exposed to its baleful effects ; they are aware of the evil, and lament their want of powers to apply an adequate remedy, they are not competent to make certain agreements for a term of years. The tenth of crops produced by land cultivated, as it may be and should be, cuts too deep into the farmer's profits, and the clerical rectors have not yet been enabled to adopt any equitable mode by which their rights can be ascertained, and therefore recur to tithes in kind. If a crop of garden pease or beans are gathered when green, and sold, both the rector, if inappropriate, and vicar claim tithes of one and the same crop, and threaten to recur to law for the recovery thereof. If the farmer gives tithes to the rector instead of the vicar, or *vice versa*,—*incidit in Scyllam cupiens vitare Charybdim* ; and this is actually the case in the parish of Sunbury in Middlesex, where tithes of green pease have been, time out of mind, given to the rector inappropriate, and now for the first time claimed by the vicar.

The consequences of tithes in kind taken by the clergy, are continual disputes and bickerings between them and their parishioners ; the farmers grumble, slacken in their improvements, give their spiritual guide all the trouble in their power while collecting his tithes, and cheat him if they can ; he recurs to law, and soon becomes the most unpopular man in his parish ; the church is deserted, the flock rapidly emerge into a state of nature, or are led away by the cant of knaves and blockheads. The philosophy of religion is spurned with the professor, or bartered for gloomy superstition. These are notorious melancholy truths, and whoever attempts to refute them, must be drove to the pitiful necessity of reasoning in the face of a fact.

I highly respect the learning and virtues of the clergy ; it is a

primary wish of my heart to break asunder the Gothic chains with which they are bound, and I call upon all honest men to assist me. The Reformation is a precedent in point; I cannot have a better; celibacy was thereby abolished, and the clergy in part restored to their natural rights; they were permitted to marry and become the fathers of perhaps a numerous offspring. Had the clergy been also permitted to farm lands, a privilege which their local situations peculiarly entitles them to, and not been confined to the narrow limits of their glebes, they would thereby have been enabled to employ and provide for their children. Agriculture in the hands of men of learning and abilities, would long ere now have been reduced to a science; and farmers of this class would have known and avoided the consequences of throwing impediments in the way of others engaged in the same pursuits.

Necessity, combined with the wretched stipends, in many parts of Wales, compels some of the clergy there to turn farmers in defiance of law, and bring their small capitals into action, before they are expended in a maintenance, which their clerical profession does not afford. I have seen, and can give ample and honourable testimony of the public good resulting from the examples given by these truly apostolic teachers, in a country where practical examples of good husbandry are much wanted. I traversed the county of Herts in quest of able farmers, to present them to this Honourable Board, and Fame led me by the hand to the rector of Hatfield. The birth, talents, and connections of that gentleman, give him a commanding prospect of his duty; his glebe contains one hundred acres, and enables him to farm with effect, and within the letter of the law; his rectory, in point of revenue, is a little bishoprick; and his farm, in point of neatness and fertility, a little paradise, by his judicious improvements. What a happiness it is, for the husbandry of this extensive parish, that their rector is a good farmer! Many rational and valuable improvements might have been expected from many other clergymen, had not the door to agricultural practice been shut against some of the ablest men in the kingdom.

The investigation of the evil leads to the remedy. Empower

the clergy by law to farm lands, and grant leases of their tithes for 21 years certain, if they think proper so to do. If they neglect the duties annexed to their sacred functions, by their attention to agriculture, or any less worthy pursuit, punish them ; but let not the measure of their punishment extend to a total deprivation of one of the most rational amusements the human mind is capable of enjoying ; for, be it remembered, this primary art in the catalogue of peace and plenty, is cultivated by the first Estate of the realm.

That the interests of the church may not suffer by collusion, let the power be vested in the patron and bishop of the diocese to appoint competent persons, to settle and approve the rent to be given, and to witness the same, by being parties to the lease or leases : the clergy to have preferable powers of distress in cases of non-payment of rent, if the land owners do not for their own, and their tenants benefit become the lessees. The consequence would be, the clergy, or a great majority of them, would cheerfully acquiesce, though left to their option, and when emancipated from at least a questionable restriction, if they do not avail themselves of the privilege of farming, they would have a more natural attachment to those who did. The tenant could then make a sure bargain at the outset with his landlord and rector, and give really more rent for the tithes than they could then be worth, the trouble and expence of collecting considered : and thus exempted from all uncertain demands, and assured of an adequate compensation at the end of his term, he would put and keep his farm in a proper state of cultivation, and the lands remain in an improved state, instead of being beggared by cross-cropping and weeds, in the last three years of the lease, and again requiring fallows, attended with the loss of crops to clean them, at an expence much greater than the amount of the profits resulting from the now latter conduct of tenants. By these means, farming will become more respectable, and, of course, more studied ; and lands kept in a constant state of increasing manurage : and by these means, and these means only, the exertions of this Honourable Board will be crowned with success.

Rate of Wages, &c.—Great part of the labour of farmers is performed by annual domestic servants, whose labour commences and ceases at no stated hours. Day labourers work from six to six in the summer, and from seven to five in the winter; their usual wages is eight shillings per week in the summer, and six in the winter. Labour performed by the great or piece, is hedging or ditching, by the 18 feet or statute pole; timber falling, by the load (50 cubic feet); cutting underwoods, by the cord of stackwood, and brush fagots by the hundred; threshing and winnowing, by the load or quarter; and mowing or shearing, by the acre. Much of the harvest work of that part of the country next London is performed by labourers whose residence is in distant parts, and where the harvest is generally later than in Hertfordshire. The price of hay and corn harvest work, by the piece or acre, differs much in different years; in wet and uncertain harvest weather, or when the crops in general ripen nearly about the same time, or ripen together, the price of labour, by the day or piece, increases; labourers hired for the harvest month have generally food, lodging, and two guineas for that time. The wages of annual servants are nearly as follows; a carter or ploughman, from 6 guineas to 9 guineas; a thresher or tasker, from 6 guineas to 7 guineas; their task is 5 bushels per day, and they are paid at the rate of 1 shilling for every five bushels extra, and 1 shilling per load for binding wheat straw for market. Boys from 2 to 4 guineas, and maid servants about 5 guineas. Day labourers employed the whole year by one master have 7 shillings and small beer, and 9 shillings and ale, for one month in hay time. The price of piecework is nearly as follows; hedging only, about $2\frac{1}{4}d.$; hedging, scouring, and edging the ditch, $6d.$; hedging and cutting a new ditch, 2 feet wide at top, one foot at bottom, and one foot six inches deep; one shilling per statute pole. Falling timber, 1 shilling per load. Fagoting, 2 shillings per hundred. Barley and oats are threshed by the quarter; wheat, pease, and beans, by the load: barley, from 1s. and 4d. to 1s. and 6d.; and oats, 1s.; and from 1s. to 1s. and 6d. for wheat; and 1s. for pease. Clover seed, 5s. per bushel. Reaping wheat,

from 5 s. to 7 s. per acre, and sometimes more, if much laid ; and 2 s. per acre for bending, with ale and small beer ; and 1 s. and 8 d. per acre, for mowing oats and barley.

Price of Provisions.—The now actual state of the peasantry in the kingdom (January, 1795), requires the particular attention of the Board of Agriculture. I hasten with pleasure to state a permanent remedy, pointed out to me by a gentleman whose powers have long been exerted to counteract the conduct of their oppressors, and to provide a steady and reasonable supply of bread at all times for the metropolis. The measure will best shew the virtues of the man, and give him and them to the world and to posterity, with that popularity which they deserve. He advises, that a sufficient quantity of the leading articles of life should be purchased by the churchwardens and overseers of the poor in every parish, or three or four adjoining parishes, at such times as they may be bought for the most reasonable price, and stored for their use. In the enumeration of these articles, he begins with bread, the staff of life. A crop of wheat, if well got in, and stacked or housed, will keep in the straw, if preserved from vermin, for seven years—the period of the Egyptian famine.—This wheat to be threshed, ground, and made into wholesome brown bread from time to time, as it is wanted for their consumption. Fuel, bacon, cheese, candles, a few groceries, or any other articles which may be considered useful to cottagers, may, in like manner be purchased and stored for their use. Pease or other hogmeat may be provided for cottagers who choose to rear and fatten their own pigs. To wean them from alehouses, the bane of the poor, barley must in like manner be provided and stored, made into malt, brewed into wholesome beer, and delivered to them in small quantities ; but subject to no more duties than beer brewed in and for the use of private families. The produce of the still to be totally out of the question. I much fear this poison is now frequently resorted to, to damp the calls of nature.

To provide a fund for these investments, the farmers and those subject to poor rates, will find it to their interests to contribute

beforehand, either in money or the above articles, *ad valorem*, the cottager and day labourer, instead of money, to receive on Saturday nights a ticket from his employer to the overseer or storekeeper, who will supply him with what articles he may want, to the amount of his wages, at prime cost, for the use of himself and family.

The investments to be directed by a committee of twelve respectable parishioners, including the churchwardens and overseers, and with powers to meet weekly or monthly in the vestry to hear and redress complaints.

Had this measure been adopted only four years ago, great part of the quantity of grain since exported, would have remained for the use of the poor, and not subject to the control of the dealer, the landed interest would have been greatly benefited, and the price of the poor man's loaf now tallied with the price of his labour.

The great labour of agriculture, commerce, and protection from foreign enemies, rests with the hardy peasantry of the country; and obstacles to the promotion of these great national objects are removed in proportion to the protection given to, and consequent increase of that peasantry. Every child that is born, is an acquisition to the state, for which reason more attention should be paid to the rearing of the deserted and orphan infant poor. I do not wish to arraign the methods now adopted; but the streets of London afford melancholy proofs that parish officers consider these very unfortunate objects of humanity, a heavy burden, and therefore get rid of them as soon as they can. Such infants, particularly in country parishes, should be consigned to the care of the most motherly cottagers in the parish or neighbourhood, who have no children of their own, accompanied with an adequate maintenance and encouragement. While a nurse of this description is rearing the tender twig, it frequently winds round her heart, and the mutual affections of mother and child grow up together in these strangers in blood:—when the child is able to earn a subsistence, it cherishes the idea, that it has a home, and which it will endeavour to uphold.

Sound reason suggested to the childless ancients, the policy of adopting infant orphan sons and daughters: friends, companions, and protectors to their declining years, were thereby obtained, on whose affection and gratitude they could rely. Such was the steady affection of these children to their parents by adoption, that in process of time the experiment was tried on those of a different age and class in life, with a view to make friends of enemies; but this latter experiment did not always succeed.

Roads.—Good roads in a corn country facilitate the agriculture thereof, as the crops are thereby conveyed to market, and foreign manure returned by back carriage. The roads in Hertfordshire are in general excellent, good materials to mend them abound every where; the sections of the great roads are curved, and rise in the middle about one foot in thirty; the timber trees and hedges towards the south sides thereof are lopped and kept low, that the sun may dry the roads. This is a practice which should be adopted every where.

Conclusion.—When ecclesiastical rectors are enabled to grant leases, and tithes in kind are commuted or arranged in a manner advantageous to all the parties concerned in them; and when the due culture of lands, at the latter end of a lease, meets a reward; the inclosure of commons and wastes, the increase, protection, and steady loyalty of the hardy and useful peasantry, and the promotion of agriculture, will go hand in hand, and these kingdoms will enjoy new and almost inestimable sources of happiness and prosperity.







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